The Circus of the Selves.

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Who is listening to the verbal and non-verbal monologue that plays in my mind throughout my waking hours and in my dreams? Who is paying attention to the avalanche of input from my senses, observing, processing, saving? Who makes me jump at a loud bang? Who reaches into the library of my memory, with exquisite poignancy, when a sensory event recalls my late wife? Who makes me pick up my guitar and play? Who sent me out with a plan almost every working day for 44 years of my life, and made me floss my teeth every night for the last 40 years? Who makes me breathe? Which of them is my "self?" I believe they all are, my Circus of the Selves stumbling around as part of my personal Virtual Reality, my consciousness, in the breathtaking paradise of the real world, when I choose to be aware of it. Why do I ask these questions? I have been asking them in various ways, both verbal and subliminal, for most of my life, but with startlingly increasing focus, clarity and perception since I started meditating on a daily basis in 2017.

On Meditation.

The purpose of meditation is the pursuit of happiness, in which, for me at least, it has been highly effective, over many years and in a number of different ways which I will explore later in this essay. Meditation is usually defined as the dedicated application of mental focus to a single object of attention. So… meditation is the pursuit of a state of consciousness by concentrating one's consciousness on an object of one's consciousness. Obviously a good place to begin an analysis of meditation is with an analysis of consciousness, (often my own, since I am not telepathic), in the hope that this will shed light on the practice and effect of meditation, to which I'll return after an extended analysis of an extremely complicated subject.

On Consciousness.

Having programmed and used computers regularly since 1969, and on an almost daily basis since 1982, I will use a computer metaphor to provide a logical framework on which to hang some of my perceptions. Computers have been developed to enhance and replace human tasks and, unsurprisingly, computer architecture mirrors human sensory and intellectual structures. This is becoming ever more apparent with the emergence of AI and its rapidly improving ability to mimic human behaviour and output. While computers are not conscious (yet) in the same sense that animals are, an actively running PC has an analogous computer equivalent to consciousness which I will refer to as the *User*

Experience for the computer. Our immersion in our own bodies and consciousness makes it almost impossible for us to grasp the intellectual and sensory mechanisms which support and underlie our "selves." Drawing comparisons between computer and human architecture will, I hope, make it easier to strip away the delusions and illusions that we have about our consciousness and see the conscious "self" as the layered, virtual and constantly changing composite that it is. Dr Frankenstein's "monster," (the computer), gives us useful psychological insight into Dr Frankenstein himself, (and all of us).

The core component of my active consciousness, (*my User Experience*,) is what I perceive as my ***narrative self*** - my active stream of consciousness - what I am experiencing, feeling and thinking in the moment as I progress through spacetime. The computer analog for this is the Active Program running in the foreground, for example a video that is running or a game which is being played. The Active Program cannot run in isolation; there are many active, background programs containing, managing and supporting the foreground task. Likewise my **self** cannot operate without a lot of behind-the-scenes brain activity, "Active Programs" of which I am mostly unaware. The most important of these background programs is the suite of programs known as **the operating system.** On all legacy and on some modern PCs there are, broadly speaking, three layers of operating system, each of which has a useful analog in human consciousness.

First is the deepest layer over which ordinary PC users have little or no direct control, the *"boot" layer*. This layer takes care of automatically starting the PC, (booting up), recognizing and initializing itself and non-optional components such as the CPU, hard and other drives, available memory, networking add-ons, etc. This layer's primary function is creating the conditions required for the *User Experience* to run on the PC's hardware. The human equivalent of this layer is always "on" in some form from conception to death, it includes the involuntary systems for breathing, blood circulation, immune response etc, that are required for human consciousness to run on the human body.

Most humans have little or no direct control of this layer, though some hindu and buddhist meditators appear to be able to control some of these systems, for example being able to endure extreme cold for extended periods of time without protective clothing. One name for this layer is the "**space of the mind**," and I will use that label henceforth. "Realized individuals" such as the Buddha say that these involuntary systems are managed by cognitive processes that may be accessed from the space of the mind, which in turn is only accessible after many years of practice by highly advanced meditators. Realized individuals perceive the space of the mind as a universal space in which no self exists. I will explore this idea in a future, related essay to be called "The Consciousness-based Universe," adding that I am not, never will be, and have no desire to be, a Realized Individual!

Windows PCs prior to Windows 95 “booted up” into the second layer, a **Command Interface** or terminal from which Windows was itself invoked as a program. The PC I am using, a Chromebox, allows the use of its Command Interface to run either the Google ChromeOS GUI, or to run the Ubuntu Linux GUI program, (which I am using to create this essay). From the Command Interface additional programs are run, either by the power user or on a user defined schedule, to manage the personalization, appearance, health and functionality of the User Experience and the Active Programs that may run within it. Some examples are installing, and updating active programs for later use, fixing problems such as virus attacks or hardware failures.

The human equivalent of the Command Interface is the **Introspective Thinking** mode humans use when we are planning and making decisions that will affect our human User Experience; sleep management, medical decisions, major and minor life decisions about family and home etc. As with the PC Command Interface this layer determines whether we will be in the default, waking User Experience or will choose the asleep, sometimes dreaming, User Experience. I will observe (for later) that when we are in the Introspective Thinking mode we are usually actively controlling the use of our senses, only allowing sensory input that is relevant to our decision making - we don’t make important decisions while our focus is on a TV program. (Our asleep, not dreaming mode is used for vital mental and physical health management, analogous to antiviral or defragging programs running in the background on a PC).

The third and highest in the hierarchy of layers is the graphical user interface, (GUI), Windows, Linux or Mac, which defines the User Experience on any computer. Active Programs that run in this layer communicate directly and mostly exclusively with the GUI for necessary computer services - memory access, peripheral access, (keyboard, monitor, microphone, printer etc), and network communications access. The GUI is not only a User Experience for users, but for all the Active Programs run by the user. This is a key point, one of the major reasons for the extended computer analogy; Active Programs do not communicate directly with the PC camera, for example, but with software managed by the GUI for camera access.

The human equivalent of the GUI, our User Experience, is what I will call each individual’s **Virtual Reality, (VR)**, which has two modes, the VR we experience when we are awake and the VR we experience when we are asleep and dreaming. Our VR is the environment in which our primary Active Program, our **self** operates. This paragraph encapsulates two of the most persistent delusions suffered by most humans. The first is that we experience reality directly. We do not. Just as PC Active Programs must access computer services indirectly, via the GUI and the other layers, our **self** Active Program can only access our senses indirectly, via our VR, (of which we are mostly unaware). This notion will be examined and explained in detail, exploring the sense of sight in particular, once this overview of the layered nature of our consciousness is complete. The second delusion is that we have a persistent and unchanging self,

and this fact will become self-evident (no pun intended) over the course of this essay!

Hardware management. Although managed primarily within the operating system, hardware devices such as monitors and external hard drives are managed via two logical layers of software.

One of these software layers is provided by the manufacturer of the device writing to a specification (protocol) provided by the OS vendor, (Microsoft, Apple etc). The other layer, written by the OS vendor, communicates with the device via the provided protocols to allow access to the device from Active Programs. The Active Program Microsoft Word, for example, does not communicate directly with a user's HP printer, but indirectly via the Windows printer interface software and the software driver provided by HP.

In humans the various body parts are the "hardware," and the "software" resides in the human brain and nervous system. Not so obvious, is that, as with computer hardware management, communication is achieved via "software" layers. Every part of the human body has a part of the brain responsible for communications between the user VR and the body part. The nervous system is responsible for communications. Neurologists have been able to establish quite detailed maps showing which part of the brain controls which body part. The medical condition known as a stroke, when a burst blood vessel in the brain results in damage or destruction of a region of the brain, illustrates this layered communication. Stroke damage to the region of the brain for an arm, for example, can result in inability to use that arm, even though the arm itself, and the rest of the brain, is undamaged. One's **self** cannot communicate directly with the arm when the "software" is broken. Modern treatment for a stroke injury like this is for the patient to spend many hours applying mental focus to the effort of trying to use the arm, (to pick up a coin for example). The focused mental attention, a kind of meditation by my earlier definition, can cause the brain to adapt a healthy area of the brain, (by building new brain cells), to the new purpose of arm management, resulting in the patient regaining use of the arm. But how does the new arm management system in the brain establish communications with the arm? It seems that the brain-originated striving to pick up the coin triggers a neurological response from the arm, which in turn strives to connect with the brain. Perhaps cognitive processing is not all performed in the brain. I will return to this concept of neurological "distributed processing" in a later section on the "*bodily self*", the gut being of recent particular interest. This kind of therapy utilizes a property of the brain known as ***brain plasticity,*** and illustrates the power of meditation to effect positive changes in the brain. Smoking, drug addiction and alcoholism are negative examples of brain plasticity, where repeated practice of bad habits causes physical changes in the brain. Meditation is a proven therapy for the treatment of these mental illnesses.

Peripheral management. PC programs rely on peripheral hardware for incoming external information. Like the hardware referenced above, the PC camera, audio input devices and data input interfaces like wifi, ethernet and USB, are all implemented using the layered software approach described above.

The human VR is constructed on an instant-by-instant basis using (at least in part) the senses, and data from the senses is not accessed directly but is filtered and manipulated by the regions of the brain responsible for each sense. Discoveries in neurology and biology are now showing that the degree of filtering and manipulation by the brain is vastly greater than is apparent to us as we go about our lives. In particular, visual processing by the brain is quite well understood, and scientists know that what our eyes see is absolutely not what we perceive as the visual component of our VR. Scientists report that each eye captures only a small proportion of the total field of vision in front of us that we think we are seeing, being limited by the physical characteristics of the eye as a camera. Each eye is taking many small “snapshots” per second of patches of the overall space in front of us, the human equivalent of the frames captured by a movie camera. These “snapshots” change instantaneously as we move our eyes, our body and our head. The region of the brain responsible for vision assembles these “snapshots” like a 3D jigsaw puzzle and creates the image of our entire field of vision in our brains. We are not seeing reality directly, rather a constantly changing view of patches of reality, seamlessly assembled by our brain and our optical organs. We are seeing a visual Virtual Reality which is further *dynamically modified by our memories and emotions*.

Likewise our other senses are incapable of feeling, tasting, smelling and hearing everything that is presented to the sense organs without filtering and modification. Instead these organs “sample” and assemble the reality for each sense in its own equivalent of the manner described above for sight. Each organ has its own brain region, its own piece of the VR, *modified by our memories and emotions*. Another example is having a conversation while walking through a busy city center; we can only do this because the region of our brain responsible for hearing filters out the city sounds captured by our ears, so that we can actually hear each other talk. The collection of sensory VRs forms a major part, (but not all,) of the overall VR we inhabit. Our Active Program, our “self” resides in the sensory bubble provided by our VR, and is only part of our overall consciousness. Our lack of awareness of our personal VR - which we perceive as reality - contributes in part to the delusions and illusions from which we suffer. The dynamic modification of the VR by our memories and emotions, the recording of significant parts of the VR’s experience to memory, and the later modifications of these memories when retrieved back into the VR, are major contributors to our delusions and illusions. An example of this is the modern destruction (by psychologists, in experiments) of eye witness credibility, for example in a courtroom trial. Unless multiple witnesses are in agreement, ideally with corroborating physical evidence, eyewitness recall of events is highly unreliable, subject to massive manipulation by personal biases, legal “gaslighters” and toxic media like Fox News and Facebook News.

Memory management. Although there are similarities at a physical level between computer and human memory management, the brain’s memory management is infinitely more sophisticated and complex than any computer’s, at least for now; AI is changing this rapidly. From the instant we wake up our waking VR is initialized using memory, and memories and emotions are

constantly used in the construction of our instant-to-instant VR. We constantly compare everything we sense with retrieved sense memories. A useful analogy might be the camera at passport control, comparing its picture of us with its database of pictures of known criminals and terrorists. Indeed, when we are asleep and dreaming our sleeping VR is constructed entirely from memories, with memory input replacing our sensory input during the dream. While the purpose and progress of dreams is not properly understood, the practical construction and experience of dreams is explained very well by the VR analogy, with memory replacing the senses and subconscious brain processes influencing the sleeping "self" to replace the flow of experienced reality.

A vivid, personal example might illustrate the impact of memory on our VR. As a young teenager I remember being smitten, on first meeting, by a teenage girl I thought very beautiful, though I was too shy to ask her out. She became part of my circle of friends, so over time I got to know her better, and subsequently found her personality abrasive and "snarky." I remember observing to a close friend that her appearance seemed to have changed, that I no longer found her attractive, that when I saw her my experience of being around her seemed to have coloured my visual perception of her. That conversation has always stuck with me, though I've long forgotten the girl's name and appearance. The beautiful girl that I first saw was now presented to me by my VR as an unattractive person.

Another personal example uses a different sense. As a young child in the UK I had to walk past a brewery to get to primary school, and I remember well how unpleasant I found the smell of beer. Once I became a young man and (unfortunately) a drinker, the smell of the brewery seemed delightful to me! The same smell but hugely modified by dynamically-retrieved, drinking memories in my young man's VR. What causes the continuous modification - by memory - of my sense-constructed VR? Are there any other subliminal factors affecting my VR? The obvious omissions from the VR described so far are the emotions, which may all be grouped into the categories of *fear, love* and *grasping*, and are some of the oldest inputs into consciousness, with deep evolutionary roots. Emotional impact on our VR will be discussed in the context of human security.

Security management. While there are many analogies between computer and human security, their usefulness is doubtful at this point. Computer evolution is changing this. The emergence of artificial intelligence facilitated by (and in turn facilitating) massive networks of connected computers, and CPUs evolving into GPUs and then quantum computers will make computer security and control necessary for human survival. AI's recent, rapid advancement has resulted as much from its ability to use Large Language Models (memory) as from advances in chip hardware. Future AI processing will be much more like human thinking than it is today because it will be memory-driven.

Human security systems are an intrinsic part of our consciousness and have evolved from the primary drivers of human endeavour, which I categorize as personal security (mostly driven by fear), social group/nuclear family security, (mostly driven by love) and personal status within social groups (mostly driven by grasping). While there are physical security systems for protection from

disease and recovery from injury, these operate entirely automatically and beyond our direct control. The security systems under discussion are emotional security systems and are subject to conscious control, the fear and grasping security systems being the hardest and easiest to control respectively.

Our fear-driven personal security systems are the oldest. Scientists believe that our species, Homo Sapiens, emerged from Africa around 300,000 years ago. Our parent genus, Homo, emerged almost 3 million years ago, with many sub-species. Homo Neanderthal and Homo Erectus are just two examples, but only Homo Sapiens survived, absorbing and displacing all the others. Despite the rapid growth of science, we know from the science, art and literature of ancient Egypt, Greece and Rome that humans have the same intellectual capacity now as in antiquity. Our family and societal interactions have changed only cosmetically since the emergence of large population centres like towns and cities over the last 5 to 10 thousand years. Our emotions have evolved over millions of years, and in such a time span 10,000 years is almost nothing.

The personal security components of our consciousness result largely from primal, basic emotions like fear, which operate cognitively the same way as they did for hominids 3 million years ago. We may have traveled to the moon but as far as our cognitive experience of fear is concerned we are little different from our stone age ancestors.

Hominids in Africa lived in relatively small family groups in an environment where deadly danger from predators was omnipresent. Fear was a constant factor in every hominid’s consciousness, just as it had been for all the evolutionary predecessors of hominids over the half a billion years since animal life itself began. To have survived that evolutionary chain, every hominid needed to have developed a sense of fear that was lightning fast and capable of recognizing any predator from every sensory input. Fear is deeply integrated into our VR and the sensory and memory subsystems that support it. It needs to operate at a subliminal, subconscious level that recognizes not only predators but also the environmental cues for predators; birds flying suddenly, dense, quiet thickets, the faintest scent of danger. The VR of the 21st century human is just as attuned to danger as our earliest ancestors. The receptors for fear permeate the fabric of our VR like background music to a horror film and our physical and mental responses to fear are unchanged. Adrenaline and cortisol flood our systems to enable rapid and enhanced physical response. Anger emerges instantly and suppresses our gentler emotions.

Everything we see, hear, feel, smell or taste is constantly mapped behind the scenes to both retrieved and “ancestral” memories in a constant search for potential danger to which we must instantly react. This is apparent to any of us who drive a car in the city. Potential danger (but from other cars, not lions,) is ever present and even the most gentle drivers are shocked by the strong emotions we experience when being cut off or tailgated. Between 2016 and 2023 road rage incidents in the US resulted in 218 murders and 12,610 injuries, according to the AAA Foundation for Traffic Safety. Additionally, in 2020, firearm-related injuries became the leading cause of US death for children and adolescents aged 1 to 19. The primitive emotions like fear and grasping gain

direct, immediate access to our “self,” often overriding our brain’s logic center, the prefrontal cortex, sometimes with consequences that are so unpredictable and violent that both the VR we create and the *narrative self* that is active within are seriously traumatized. Psychosis, depression, addiction and other forms of mental illness can be the result.

And yet the 21st century is for almost all of us a vastly safer environment than that of our forebears. Our life expectancy is 60 to 80 years versus 20 to 30 years for stone age people. We mostly die from old age or self-inflicted lifestyle causes, rather than from violence or accidents while hunting or gathering. Unfortunately our cognitive systems have not had time to evolve. Our VR is in a constant state of apprehension more suited to the prehistoric savanna than present day suburbia. Our ancestral memories make us continuously on the lookout for a lion around the corner, causing our still-primitive response systems to drive our subconscious physical and cognitive systems into a state of wild overreaction. The cognitive scientist Dr Anil Seth suggests that our “predictive brains” are continuously reshaping our VR using a fundamental biological drive to stay alive in a dangerous, unpredictable world that we no longer inhabit. The “controlled hallucination” that is our VR exaggerates our physical, animal nature and the body's role in shaping our experiences of *self*; we are "beast machines" experiencing a “controlled hallucination” of conscious experience that is continuously updated by the “predictive engine” of our brains.

Our grasping-driven, personal-status-within-social-groups security systems are the most recently evolved. There is a kinder, gentler, “*social machine self*,” a Dr Jekyll aspect of our consciousness that is in direct opposition to the “beast machine self” Mr Hyde. Our more sophisticated emotions seem to have evolved along with, (and played a part in the development of,) the factors that enabled homo sapiens to become the exclusive species of Homo that now dominates the planet. Perhaps the key characteristic that distinguishes Home Sapiens from the other members of the genus Homo is the size of the social group that can be maintained without internally driven collapse. Archaeology tells us that early Homo Sapiens lived in communities of up to 150 people, while other species of the Homo genus were only able to succeed in groups of 15 to 25 people. Anthropologists believe that the much larger social group size explains the success of Homo Sapiens, and that the limiting factor is the number of stable social relationships an individual can maintain. Larger groups can dominate smaller groups and better survive hostile conditions. What enabled Homo Sapiens to tolerate such large groups without experiencing social collapse? How is Homo Sapiens able to maintain so many more stable social relationships than, say, Homo Neanderthal, the second most advanced species of genus Homo, who had a similar intellectual capacity? Why didn’t Homo Neanderthal’s much greater size and strength allow him to prevail in competition with Home Sapiens?

Language was clearly a major factor. Homo Erectus was the evolutionary predecessor of Home Sapiens, Home Neanderthal (and Homo Denisova, evolutionary peer to Homo Neanderthal). The archaeological record suggests that spoken language was first used by Homo Erectus over 400,000 years ago. The discovered Homo Erectus artifacts strongly indicate the use of

communication by spoken language to explain the nature and organization of the artifacts found. The facial structure of Homo Erectus supported the production of only a limited number of sounds, necessitating a simple language. The facial structures (and brains) of Homo Sapiens have evolved to support the production of many more sounds (and a more complex language) than either Homo Erectus or Homo Neanderthal.

European evidence from 60,000 to 70,000 years ago shows that Neanderthals had tools, created simple cave paintings, and used beads and simple personal ornaments. The quantity, quality and scope of this evidence is eclipsed by the flood of musical instruments, figurines, murals, and sophisticated personal ornaments that accompanied the much more rapid spread of Homo Sapiens across the broader Eurasian continent, with uniquely large social groups and highly sophisticated language skills.

The music, art, dance, language and spiritual practices of Homo Sapiens formed a mutually supportive virtuous circle of intellectual growth that enabled the socialization necessary for ever larger groups. Larger groups led to the increased specialization and social stratification needed for small, itinerant groups of hunter gatherers to transform into towns and cities based on agriculture.

Advanced artistic and cultural practices led to highly developed symbolic thinking. Specialized merchant classes used advanced symbolic thinking to develop early mathematics as a tool for inventory control of stockpiled agricultural produce. Specialized religious and administrative classes then used mathematical symbols as the basis for written language. From written language sprang the history, science and the desire to plan for the future that characterized early civilizations around the Mediterranean. **Art, symbolic thinking and their required high level language skills weren't the products of early civilizations but the causes.**

The ruthless and aggressive Mr Hyde aspect of Homo Sapiens arose from the need to incorporate "predictive machine" capabilities into our VR, for survival on the savannah. Our compassionate, Dr Jekyll aspect sprang from the evolution of larger social groups that extended family-like bonds to everyone in the tribe. To achieve this, as described above, the consciousness (and brain) of Homo Sapiens evolved to incorporate artistic and symbolic thinking into our VR. We are hard-wired for compassion, language, the arts and symbolic thinking, (Dr Jekyll), and war, (Mr Hyde). The early hominid's "prediction machine" is now a "social machine" capable of looking back to the Big Bang and forward to space travel, AI and autonomous robots.

Until recently computer security systems have been relatively simplistic, focused on specific threats. At the personal computer security level each personal computer has password and virus security to protect the individual machine from external threat. At the social group level, organizational computers also have password and virus security, to protect clusters of machines in the same organization from external attack (and each other), the equivalent of nuclear family security. With the coming of the Internet, global commerce, rogue nations like North Korea and Russia, and Social Media like Facebook, a whole new barrage of computer threats have emerged. Rogue nations and criminals,

(often the same,) attempt theft from financial institutions, disruption of key infrastructure systems for energy and healthcare, and destabilization of social frameworks using disinformation and propaganda. Unlike password and viral attacks, which are broadcast indiscriminately, these attacks can be highly focused and require deep knowledge of the targets to be successful. These attacks are the computer equivalent of the personal-status-within-social-groups (grasping) level of human security, and, despite their relatively immaturity, have been shockingly successful.

The development of vastly more powerful computers, of globally-accessible databases of both personal and organisational data, and of Large Language Models, (of all the text ever published on the Internet,) powered by AI, means the threat is growing existentially, not only from rogue nations using AI, but potentially from AI-powered networks themselves. With global databases and Large Language Models, AI systems now have deep memory systems. What they lack is a consciousness to operate autonomously of their own "will." How can our knowledge of human consciousness help us decide what might constitute a computer consciousness? Will a future generation of AI agents, (autonomous programs,) have the capability to evolve a narrative self like each human's narrative self, or a Command Interface layer for the computer equivalent of Introspective Thinking?

If defense against "conscious" AI systems is possible, it will be by managing their evolution to incorporate the computer equivalent of the informal and formal morality rules that bind human society. Asimov's Three Laws of Robotics are a good place to start, the equivalent of the 10 Commandments, but totally insufficient for the modern world; something much more sophisticated like the Buddhist Five Precepts and Eight Jewels will be needed, accompanied by the computer equivalent of the US Legal Code.

Summarising VR components using the "selves". I have outlined a number of "selves" that provide input into our VR. (Selves 1, 5, 6, 7 and 8 below use names I have adopted from other sources. Selves 2, 3 and 4 use names I assigned myself).

1. The narrative self. Our primary active program is what most of us identify (and usually to the exclusion of the other selves) as our **self**.

2. The sensory self. Our narrative self believes that we experience unfiltered reality directly via our senses. In fact we experience reality indirectly - as the sensory self, presented to our narrative self by our VR, and massively modified with filters from each of the other selves.

3. The memory self. The role of memory in the assembly and continuous update of our VR is, I believe, hugely underestimated. I will return to this topic in much greater detail to reflect on the role all of the selves play in the way we perceive and respond to reality.

4. The survival self. A combination of Mr Hyde and the pre-Homo Sapiens social self resulting from the family-based, smaller units of hominid society.

5. The social self. A more accurate name would be the ***symbolic self,*** and I will use these terms synonymously. The self that results from the development

of art and symbolic thinking that enabled the town-based, larger units of Homo Sapiens, and ultimately modern humankind.

Here are three more:

6. The volitional self. While other hominids and even species, (birds, primates,) show some ability to base current behaviour and activity on future needs, the interplay in Homo Sapiens of the emotions, symbolic thinking and memory has led to a unique understanding of agency, (what we can do,) and intention, (what we will do) to plan for the relatively far future. The volitional self is closely associated with, and can trigger, activity in the Command Interface (of Introspective Thinking). Research shows that variability in the volitional self is caused not only by normal individual variability, but has neurological roots. Maus Husain, Professor of Neurology & Cognitive Neuroscience at the Nuffield Department of Clinical Neurosciences and Department of Experimental Psychology, University of Oxford, writes the following in a Guardian newspaper article: "*I saw a young man called David who had been a high-flyer in his firm but suddenly lost interest in his job as well as the people around him. Eventually, he was fired from his job but reacted with complete indifference. He couldn't even be bothered to register for unemployment benefits. He did nothing all day, waiting for his roommates to come home to cook for him. His doctor tried him on an antidepressant, but it had no effect.*

David wasn't depressed, though. In fact he was quite happy. After looking deeper into his case, we discovered that the cause was actually two tiny strokes, one on each side of the brain. These were located in the basal ganglia, nuclei that are crucial for motivated behaviour. Research in animals and humans has shown that the basal ganglia connect our needs and wants to actions. When the basal ganglia are dysfunctional, people don't initiate actions even though they are able to do so if they are prompted. David, for example, could put the rubbish out or clean the house if he was asked. But left to his own devices he did nothing. Studies in people who develop apathy have shown that many of them just don't find it sufficiently rewarding to take action. The cost of making the effort doesn't seem worth the potential benefit. In some patients, drugs that boost the dopamine system in the brain can restore motivation. Dopamine plays a key role in the reward system of the brain – but whereas previously neuroscientists thought it was a chemical associated with pleasure, recent research shows that it works by driving "want" – incentivising people to seek the outcomes they find rewarding. David was successfully treated in this way: his motivation levels went back up after taking a drug that stimulates dopamine receptors in the brain. Because of this, he was able to get a new job, become independent and even find a partner, something he would never have bothered to do when he was in his apathetic state."

7. The bodily self. Modern neuroscience identifies **spatial awareness** and **wellness awareness** as sensory inputs of which we are mostly unaware(!), but which play a significant role in our VR.

Spatial awareness. Humans use multi-sensory input, memory and key memory brain regions, to create cognitive maps that allow us to think in two and three dimensions, understand our position relative to other objects, and navigate in familiar and new environments. (I'm not making this up! The key memory

regions involved are the Posterior Parietal Cortex, the Hippocampus, the Retrosplenial Cortex, the Parahippocampal Place Area, the Right Superior Temporal Cortex, the Dorsal and Ventral Streams).

At least one other sensory input also plays a part, in which the primary visual cortex is bypassed and visual information is subliminally processed by other parts of the brain, as illustrated by the phenomenon known as ***Blindsight*** - "*In 2003, a patient known as "TN" lost use of his primary visual cortex, area V1. He had two successive strokes, which knocked out the region in both his left and right hemispheres. After his strokes, ordinary tests of TN's sight turned up nothing. He could not even detect large objects moving right in front of his eyes. Researchers eventually began to notice that TN exhibited signs of blindsight and in 2008 decided to test their theory. They took TN into a hallway and asked him to walk through it without using the cane he always carried after having the strokes. TN was not aware at the time, but the researchers had placed various obstacles in the hallway to test if he could avoid them without conscious use of his sight. To the researchers' delight, he moved around every obstacle with ease, at one point even pressing himself up against the wall to squeeze past a trashcan placed in his way. After navigating through the hallway, TN reported that he was just walking the way he wanted to, not because he knew anything was there*". There are undoubtedly equivalents to Blindsight for each of the senses of which we are not yet aware, legacies of our insect and animal pasts, preserved for their extreme utility.

Wellness awareness. While we are aware of sensations of pleasure and pain being reported back to the brain from most bodily regions, neuroscience is now realizing that there are subliminal interactions between the brain and other organs, (already referenced in the earlier discussion on stroke victims). A well-researched example of this is the Gut Brain Axis, which refers to the intricate network of communication pathways between the gut and the brain, involving the nervous, immune, and endocrine systems.

The gut microbiome is a major site of immune activity. Inflammation in the gut produces hormones and neurotransmitters that can travel through the bloodstream and affect brain activity, mood and behaviour. The communication is bidirectional, chronic stress, for example, can disrupt the gut microbiome and negatively impact the gut-brain axis. The gut seems to have neurological abilities of its own. Probably for this reason stress management techniques like meditation, yoga, and deep breathing can be beneficial.

8. The sexual self. Given the amount of time that both men and women spend thinking about sex, (10 to 20 times a day, men more than women, according to studies), it is clear that a *sexual self* exists. I have problems discussing this self that have nothing to do with prudery or shyness; rather they relate to the fact that, more than any other of the selves, human sexuality seems to me to vary so much from human to human that I feel incapable of making many generalizations about it. The obvious differences between men and women in physical attributes, life experiences and societal laws, rules and expectations make it very difficult for each gender to imagine what it would be like to think and live as the other.

Analysis of the sexual self is further complicated by an observation that I made at the age of 13. At my all-male secondary school, gym and sports 3 times a week were mandatory, as were the communal, naked showers that followed. I observed a huge spectrum of male body types and sexual characteristics; from one 14 year old boy with no bodily hair at all, large, feminine breasts, pronounced hips and a very small penis and scrotum; to a 13 year old with extensive bodily hair, a moustache, and a physique like a gorilla; to me, weedy and skinny, yet with "normal" genitals and pubic hair. It is my belief that there aren't just two physical genders, rather two, overlapping Normal curves, with two modal peaks for the "average" man and woman. At one tail of the two distributions are males like my "gorilla" peer, at the other tail are the highly feminine equivalents, (the "octomom" perhaps). In the overlapping area between the two modes are people whose sexuality is somewhat indeterminate and possibly fluid. Doctors back in the 1930s who couldn't determine a baby's sexuality from the genitals - was it a big clitoris or a small penis? - would sometimes decide, erroneously, that the child was a girl, and remove the penis surgically, causing huge gender dysfunction issues later in life.

Then there is the question of the gender of our brains, as opposed to our bodies, it seems there is not a 1:1 correspondence between brain gender and body gender. The BBC produced a 2014 documentary "Is your brain male or female?" You can watch it at this link. **https://www.youtube.com/watch?v=oUk669IiOQw**

Having said all of this, it is clear that the *sexual self* plays a huge role in each individual's day-to-day consciousness, and I will summarize what I believe are the obvious areas of interaction between the *sexual and the other selves*, without being gender specific.

1. The narrative self. We think about sex 20 to 30 times a day, but this represents only the times our sexual urges are stimulated, and is only the tip of the iceberg. We spend at least as much time thinking, in a non-sexual way, about our relationship (or lack of relationship) with partners. Even our dreams are infused with our sexual selves. Our narrative self is constantly interrupted, directly or indirectly, by our sexual self. We learn to manage this as best as we can, but there are times when most of us are either temporarily overwhelmed by our sexual selves, as seen in the prevalence of counseling services, or more seriously when the sexual self obsessively takes us over, sometimes with fatal results; most murders are murders within the family. Understanding our personal sexual self is critical for overall mental health.

2. The sensory self. All of our senses, especially under the influence of the memory self, can invoke the sexual self, and management of this is paramount for good mental health; the post-internet pandemic of pornography is causing serious problems in human society that will have to be dealt with properly one day.

3. The memory self. The memory self can be a great influence for good on the sexual self, for example reinforcing spousal love and family values, and aiding the grief process. Obsessive memories of unrequited or lost loves can be very destructive.

4. The survival self. The sexual self has deep evolutionary roots; plants, fish and insects all have genders. It is worth noting that the negative side of the sexual self, (Mr Hyde's bad side), has most of its origins from pre-human times, but that human family love as we know it, (Mr Hyde's good side), has been a major force in the success of our species since hominid times.
5. The social self. A major part of the evolution of the social self involved the evolution of the sexual self to accommodate larger and larger villages, towns, cities. All the major religions, (probably all religions,) encode strict rules, both moral and legal, around the containment and management of the sexual self. Dr Jekyll's social and moral values are a hybrid of these rules and Mr Hyde's family values.
6. The volitional self. The sexual self has astonishing power to hijack, circumvent and otherwise interfere with the operation of the volitional self!
7. The bodily self. Given its antiquity, it seems obvious to me that the sexual self has the ability to interact, subconsciously and subliminally, with pre-hominid inputs to our senses. For example, neuroscience is now able to trace the prevalence of foot fetishes to the fact that the regions of our brain responsible for managing our feet and our genitals are adjacent.

Earlier in this essay I stated that there were two persistent delusions suffered by most humans, the first that we experience reality directly, the second that we have a persistent and unchanging self. For many of us these do little harm, especially if we intuitively learn to be circumspect in our reaction to experiences, tempering our responses with introspection, maturing even while remaining delusional. It is my belief, however, that better understanding the nature of our consciousness can enhance and accelerate personal growth for almost all of us, and can mitigate mental stress and disorder for many of us.

We don't experience reality directly because what we think of as reality is, in fact, our VR, the Virtual Reality assembled by our brain for a dangerous world in which we no longer live. The data transmitted by all our senses is filtered and reassembled by our brain into a manageable form. Mentally ill people suffering from hallucinations perceive a VR that can have very little similarity to that experienced by those around them. Some delusions are dangerous and broad in scope, affecting even "sane" people. For example, many people whose only experience of news is Fox, other right wing media, and Facebook groups of like-minded people, have accepted the disinformation and lies spread by these heavily biased "news" sources; that the invasion of Congress on January 6th 2021 was a peaceful demonstration disrupted by Antifa activists who performed the violent acts; that black and brown skinned migrants are mostly evil, murderous, drug dealers; that black and brown skinned people are inherently morally and mentally inferior to white people. Understanding that the Mr Hyde component of our VR is highly susceptible to disinformation is the first step towards a more objective, realistic view of experience. Helping people suffering from serious depression or childhood trauma to understand the memories or physical causes that contribute to their damaged VR is the first step to recovery.

The existence of a persistent, unchanging self is delusional for many reasons. Most of us believe that our narrative self is our true, persistent self. If there is such a self, then surely it is the totality of our consciousness: our VR itself, together with the multiple selves contained within it, and all the background, subliminal and subconscious cognitive and neural processes that support them. Our narrative self modulates with every memory that is stored, and so does our VR. We don't perceive the cumulative changes because they are mostly very gradual, but how often do we hear that some event, (the birth of a child, a serious accident, a revelation on the Road to Tarsus,) "changed me." We age and (mostly) "grow up". I am not even close to being the same "self" at 73 years that I was at 18. Superficially I look somewhat the same, but the changes to my consciousness have been massive. I read poems and prose I wrote then and barely recognize myself, the cognitive skeleton is recognizably the same but the changes wrought by time, experience and accumulated memory are huge. Many Buddhists identify reincarnation not as a succession of past lives but as the succession of billions of instants of time in our lives, each instant marked by the duration of an emotion, and each instant a rebirth, dependently arising from its predecessor. Karma is the incremental change generated by each successively and dependently arising instant, driven not only by time but also by the impact of each of our other non-narrative selves. From the 1930s onwards, Hitler suffered from stomach pains and developed eczema on his legs, ongoing inflammation damaging his *bodily self* and possibly making him insane. Deaf and blind people's lives are hugely affected by the damage to their *sensory selves*. Alzheimer's patients become different people with the slow destruction of their *memory selves*. When the *survival self* becomes overwhelmed by Mr Hyde, mental consequences include paranoia, manic states and crippling claustrophobia. Jesus Christ, Buddha, Shakespeare and J. S. Bach had extraordinary *social (symbolic) selves*. Helen Keller must have had an astonishing *volitional self*. Each memory state of a running computer is completely different to all the others, even when booting up. Each of us is not one, unchanging self but billions of karmic instances over the course of our lives. Each individual consists of all her selves and all her life instances. Time is neither linear nor continuous, according to the physics of relativity and quantum theory. *Before*, *during* and *after* are illusions created by our subjective view of reality. I believe that the totality and quality of our life instances is persistent and real, a fact that is partially hidden by the nature of the universe in which we reside, but in large part by our two delusions of consciousness.

Understanding the nature of the two delusions helps us not only to overcome them, but also to better understand our own nature and the nature of the universe of which we are a part. Knowing, (even if not fully capable of accepting), the truth is nearly always better than delusion. It is not my narrative self that stumbles through life, alone. Rather it is the totality of my consciousness, the circus of my VR, with narrative self as ringmaster, and the other selves as supporting acts, all held together within the circus ring of memory. Newton said "*If I have seen further, it is by standing on the shoulders of giants*". The giants of our consciousness are the personal, ancestral and

collective memories stored in our brains, our cells, our DNA, our cultures, our books and now in our computers. We are not alone. We are all connected.

States of mind and our Virtual Reality. Psychologists such as Paul Eckman and Robert Plutchik have proposed (and I accept) that emotions are hierarchical. Like colours, some are primary and others are composite, formed by combinations of various proportions of primary and other composite emotions. It is my belief that the three primary emotions are, (as stated earlier and borrowed from buddhist psychology), fear, love and grasping.

These are the oldest emotions, from an evolutionary point of view, each evolving from a particular point in our evolution and each being inherent within all human cultures. Fear originates from the basic flight response to danger seen in even microscopic organisms. Love originates, (at the least, it is shared across many species other than Homo), from hominid society, and is the primal emotional response to members of the same family unit. Grasping originates from the emergence of Homo Sapiens, accompanied by the secondary emotion compassion, together forming the emotional glue that enabled the larger societal groups of Homo Sapiens to thrive. Compassion enables non-sexual, non-familial bonds between societal groups. Grasping allows competition without the kind of aggression that leads to bloodshed or murder, at least within the societal group. (Capitalism?)

Fear, love and grasping are instinctive emotions that are triggered by external stimuli and generate composite emotions which modify the VR as a temporary (unless neurotic) ***state of mind***. Sudden silence in the forest causes instinctive fear which results in a cautious state of mind. A hurt child generates instinctive love which results in a maternal state of mind. An Olympic competition triggers the grasping instinct which results in an award ceremony with a national anthem and a countrywide patriotic state of mind. Not all states of mind are emotional; long term pain, for example, usually results in the state of mind we call depression. While many states of mind are beneficial to our welfare, some are not. States of mind can trigger both behavioural responses and other states of mind, both of which can have positive or negative effects on our welfare or the welfare of others. Like our survival and social selves, states of mind evolved to enable us to survive and thrive on the ancient african savannah and, as with these selves, are not always appropriate to the modern world, and can result in inappropriate reaction or mental illness.

States of mind are modulations in our VR by actions or responses from one or more of its contained selves. We often use colours to describe them, a black temper, a blue mood, green with jealousy. I will illustrate with a detailed example of an addictive state of mind from my own life, followed by a psychological analysis of the interplay between emotions, the *selves*, states of mind and resulting behaviours.

I started smoking cigarettes in 1964 when I was 12 years old. A couple of cigarettes a week became 5 a day by the time I was 15. When I left home at 17 years old I was smoking 20 plus cigarettes a day. By that time I had matured enough to realize that smoking was not cool at all. I had developed a smoker’s cough, which really exacerbated and extended my ever more frequent common

colds, and I was spending a big part of my discretionary income on cigarettes. I really wanted to quit, and remember making many futile attempts, which invariably failed by early afternoon on the first day, when the thought of getting through the rest of the day without a cigarette became unbearable.

At 21 years old I moved to London and found a group of friends (with whom I am still close, despite my move to America in 1984). Almost all of my friends and most of my colleagues at work smoked, and in those days people smoked everywhere, at home, at work, on public transport, in pubs and restaurants, one of the reasons giving up was so hard. By 1977, however, most of my close friends had managed to quit, and this really increased my desire to stop, as, in addition to the cost and health issues of smoking, I now felt weak-willed and inferior compared to my closest peer group.

I knew from bitter experience that quitting “cold turkey” simply didn’t work for me. I have always been full of nervous energy and now realize I have a highly addictive personality. I decided to try a different approach. My daily routine back then was: wake to the alarm; smoke a cigarette in bed; cup of tea with another cigarette; bicycle to work; another cigarette; then hourly cigarette breaks through the day until pub time, around 9 pm, with pretty continuous smoking until bedtime. I also knew from my early, abortive attempts at quitting that certain events were strong craving triggers, waking up, tea or coffee, after meals, friends lighting up, and especially drinking alcohol at the pub. (None of us ever drank at home except at parties). I also speculated that, while going without a cigarette the rest of my life, or even until bedtime, seemed impossible, deferring a cigarette might be manageable.

One night around fall 1978 I put my tobacco in the kitchen and the next morning waited until after my cup of tea for my first smoke. The craving when the alarm went off was very strong, but surprisingly bearable, much mitigated by the knowledge that I would have a cigarette after my cup of tea. I decided to do this for 2 weeks and see how I felt. After 2 weeks the alarm no longer produced any (Pavlovian) craving, I now had no problem getting up in the morning without a cigarette, for me back then a major breakthrough. In the next 2 weeks I deferred my first cigarette until I got to work, and then gradually deferred the first cigarette of the day. A year later, fall 1979, I wasn’t smoking until I got to the pub around 9pm, (my friends and I met at the pub every day at that time, another tale of addiction!) In that year I also had another realization; all my earlier attempts at quitting had been all or nothing, having a single cigarette terminated the attempt. I now understood that I could have a “slip” in my cutting back schedule without that ending my overall campaign, rather the opposite, the shame at my weakness only served to strengthen my resolve. Understanding this made the final push to becoming a non-smoker a little easier. Even so, it took me another year to get through the 9-11:30pm period every day without a cigarette, as this was the hardest. Despite frequent “slips” I wrote in the address book I use to this day “*11/11/80 last fag*.” I haven’t smoked a fag (cigarette) since then, almost 45 years ago. I’ve smoked occasional joints, including some mixed with tobacco, as is the practice in Europe, but never smoked a cigarette per se since then, the addictive bond for tobacco was too broken for its repair by an occasional joint.

The first few months were very difficult, especially at the pub, but I persisted and the cravings became much rarer and of less intensity. By the time I met my future wife, Anne, on a trip to the US in summer 1981, the cravings were almost gone, and even a huge financial inducement would not have served to make me go back; I was a non-smoker, I had quit. Anne moved in with me in January 1982 and we were married in May 1982, (she died 3 months ago on January 11th 2025, I miss her terribly). She smoked about 5 cigarettes a day, though not in the house, it didn't bother me much, except for my concerns for her health. She stopped during both her pregnancies with our kids, and stopped permanently in December 1996. I only mention this to show the power of my *volitional self* in this respect, the finality of my quitting.

My UK friends and acquaintances who did not stop smoking are dead now, mostly from smoking related diseases. Whenever a celebrity from the 1960s and 70s dies, I usually look online to see the cause. Like George Harrison, if they didn't stop smoking it usually killed them, Keith Richard seems to be the only exception. I can attest from personal experience that the physical effects of withdrawal, unlike the case with most addictive drugs, are minimal and over within a day. Smoking is almost entirely a mental addiction. Yet quitting smoking, despite its horrible immediate side effects, (bad breath, phlegm, gross coughing, exacerbation of flu and cold symptoms), is notoriously difficult. In the next paragraphs I will explain, using the psychological context of this essay, why the tobacco habit is so addictive, and why my 2 year withdrawal program worked.

I don't believe that smoking, for most people, is physically addictive. In my case I experience more physical withdrawal symptoms if I don't drink any tea in the morning than I ever experienced from tobacco, and skipping tea is easy, (albeit slightly disturbing,) for me. Smoking is primarily a mental addiction, albeit an extremely powerful one, and one whose addictive potential varies individual by individual, personality type by personality type. I have known several individuals who were truly "social smokers," only smoking at parties or in the pub, seemingly having no problem with cessation for months at a time. These are exceptions, most people who smoke on a regular basis become addicted to a greater or lesser degree within a few weeks. Although the physical effects of smoking are relatively slight, they are responsible for the mental effects that prove so addictive.

Developing an addiction to smoking is intertwined with each of our cognitive selves, one of the reasons the addiction is so strong. Nicotine is the physical tobacco component that is most responsible for the development of the mental side effects. On smoking a cigarette there is an immediate jolt in cognition, caused in part by the nicotine's production of adrenaline, which stimulates the body and causes an increase in blood pressure, respiration, and heart rate, physically rewarding the smoker with a non-intoxicating feeling of well-being. In my personal experience, only the first cigarette of the day produces this physical feeling, after that it's all mental addiction. The following narrative describes a psychological day in my life *before* and *after* undertaking the cessation plan, ("the plan").

Circus of the selves.

My alarm goes off. I wake up, my *memory self* assembles my waking VR with its *narrative self*, including the strong desire to smoke, triggered by the alarm.
(I have smoked my first cigarette of the day immediately after the alarm thousands of times, the physical reward has produced a deep, Pavlovian bond that my memory self has faithfully reinforced).

Before: I smoke a cigarette in bed, cough up and swallow phlegm, then get up. My morning state of mind is dour.

After: my *volitional self* strongly tells me not to smoke, my *memory self* reminds me that I can have a cigarette in a few minutes. I get up. As the plan progresses my cough improves, faithfully recorded by my *memory self*, the Pavlovian smoking response to the alarm is weakened, and my state of mind is slightly less dour than the day before.

I perform my usual morning rituals. It is raining, (I live in London,) I get on my bike with my rain cape and cycle the 3 ½ miles from home, (Battersea,) to Brixton, (work). My *survival self* thinks I should stay home, but my *volitional self* reminds me of the consequences of not going to work, and wins. I am at once terrified by the rush hour traffic on the South Circular Road, (*survival self*,) and wildly exhilarated by the wind, rain and Clapham Common greenery, (*sensory self*,) my *bodily self* makes me go as fast as I can, keeps me as safe as possible, and helps me weave through the traffic at lights, (I am in my twenties and crazy). My VR is now lit up and my state of mind is agitated and expectant. I go to my desk in the staff room.

Before: I smoke a cigarette, chat with my fellow smokers, (*social self*), cough, head into my classroom, (I am a maths teacher,) and hastily set up for my first class. My state of mind is nervous and a little worried as I am prepared but not as well as I would like to be. The class probably goes OK, I have good classroom management skills.

After: I immediately set up for my first class, it helps to suppress the desire to smoke, (much easier than at waking). Smoking and related social interactions take up a lot of time, not smoking gives me, to my surprise, about two hours a day extra prep time. The multitasking capabilities of the *narrative self* were shown to be abysmal in an MIT study that compared student absorption and retention of learning both with and without access to smartphones. My classes are better prepared and I am a more effective teacher, my state of mind is one of professional and personal satisfaction, (*social self*,) my addiction to cigarettes has taken another, incremental hit.

This process is repeated throughout the day, intertwined with other, non-classroom activities. There are formal morning, lunch and afternoon breaks for staff and students, of 15, 60 and 15 minutes duration.

Before (AM and PM breaks): I go to the faculty common room, socialize with the other smokers, drink a cup of tea and smoke at least one cigarette.

After (AM and PM breaks): The faculty common room is full of smoke, the few non-smokers avoid it. My *memory self* reminds me that both the smoky room and the cup of tea are major triggers for me. I stay in my classroom and prepare for my next class, (*volitional self*).

Before (lunch break): I go to a nearby pub, where I drink 1 or 2 pints of beer with lunch and chat with the 5 to 10 other teachers who are usually there, (*social and sensory selves*). (Shocking but true, the UK was a very different place in the 1970s!) I smoke around 3 cigarettes. The teachers present share my proclivities, our repeated socialization is in the direction of self-indulgence and away from that of pedagogy(!!!) My state of mind is buzzed.

After (lunch break): The nearby pub is full of smoke. My *memory self* reminds me that both the smoky pub and the beer are almost guaranteed triggers for me. I eat a brief lunch in the school cafeteria with the other non-drinking teachers, the socialization is strongly in the direction of pedagogy, (*social self*). The remainder of lunch is spent in lesson planning and preparation. (*volitional self*). My VR's state of mind is perfectly attuned to the afternoon's teaching.

I think that this is enough to understand that daily life is much more than just the narrative self's progress through the day, that there is constant interplay between our emotions, the narrative self and our other selves, constantly reconfiguring our VR and its states of mind. The volitional and memory selves in particular control the actions, (or inaction), of the narrative self, and are in constant motion during our waking hours.

Addictions enmesh themselves in all our activities and interactions, disrupting and corrupting our *sensory, social and survival selves* by playing havoc with our *volitional and memory selves*. Recovery is only permanent using tools that take advantage of the very brain plasticity that led to the addiction in the first place. My negative brain plasticity consisted of a series of bonds between all of my daily activities and the smoking addiction. The most pernicious bond was with my *narrative self* that perceived itself (myself) as a smoker, and couldn't conceive of itself (myself) as a non-smoker. This bond was also the last to break as part of the 2 year plan, even persisting a while after I had stopped smoking; I had **quit** only when I saw myself as a non-smoker. Twelve Step programs have such tools at their core, but the tools must be properly used for recovery, starting with the *volitional self*. As can be seen from above, each of my **not-smoked cigarettes** had two effects; it weakened all the addictive bonds by physically healing my brain using brain plasticity and my *memory self*; it was replaced by daily activity that made me a better person, improving my self-image and further weakening addictive bonds with my volitional self, my social self and my sensory self. I want to examine each of these bonds in more detail.

Sensory Self addiction. The active drug in cigarettes, nicotine, is not particularly physically addictive, even compared to a mild drug like caffeine. Inhaling cigarette smoke is, at first, extremely unpleasant, it is a learned behaviour. I learned at 12 by going to the woods alone, then smoking and forcing myself to inhale 5 cigarettes, one after another. As well as coughing a lot, I also threw up. After that I enjoyed the buzz of the first cigarette of the day. Cigarettes also gave me ongoing physical satisfaction through the oral, sucking component, obvious in its connotations, and through the constant routine of lighting and manipulating cigarettes between their packet, my fingers and my mouth. These repetitive physical actions, together with their associated rewards, rapidly took

advantage of my brain plasticity, causing the act of smoking to become a strong habit and a fixture in my VR.

The Narrative Self addictive bond. Smoking cigarettes made my narrative self feel confident, relaxed, more in control, more able to speak and socialize. My narrative self rapidly identified as a smoker, and the bond of identity is a very strong bond indeed.

Memory Self addiction. Smoking became rapidly ingrained in many of my memories, simply because it was such a repetitive, periodic habit. The association was frequently with good memories, too, chatting in the pub and at work with friends and colleagues, and with many rest and relaxation pauses throughout the day. Good memories make for a strong addictive bond.

Survival Self addiction. Paradoxically, given the stimulative effects of nicotine, smoking can have a major calming effect. In the past people often shared cigarettes after a near-miss accident for example. Conversely, in old movies we often see people smoking after sex, providing a strong Survival Self bond with the instinct of reproduction.

Social Self addiction. The tactile actions involved in smoking are distracting, and provide strong relief from anxiety before a social event. Cigarettes are also a shared social habit, rapidly becoming an intrinsic component of our social VR, another very strong addictive bond. The power of Social Self addiction cannot be overstated. It was the reason it took me a year to break the evening smoking bond, when I was socializing in the pub with my closest friends.

Volitional Self addiction. As I described above, it is physically difficult to become addicted, requiring strong volition, you have to want it. In the old days peer social pressures to smoke were great. Almost everyone, (staff and students), at my high school smoked, we even had a smoking room for sixth formers, (juniors and seniors in the US). Continued smoking in the face of sickness, especially respiratory sickness, shows the strength of the volitional self bond. I'll never forget a BBC TV program I was made to watch, about smoking in the 1960s, when the head of a smoking man was shown while he was saying that he couldn't give up. The cameras panned out to show that one of his legs had been amputated, as a result of peripheral artery disease. He went on to say that he would soon lose his other leg unless he stopped smoking; he didn't think he could.

Bodily Self addiction. The physical side of smoking involves an early morning buzz, oral stimulation and satisfaction, and calming, socially reinforcing hand activity, as the smoker opens and closes cigarette packets, shares and lights cigarettes. This is repeated many times a day, often as a "reward," so that the memory self and brain plasticity continually reinforce the mental compulsion to smoke that makes it so hard to give up.

Every smoker's addiction is a little different, but the commonality is huge. Without my realizing it, my "plan" had the effect of gradually weakening the addictive bond for each of my other selves. Plans that focus only on physical addiction may work, but often only temporarily. I have a friend who quit smoking 20 years ago, using nicotine chewing gum. He is still addicted to the gum, not as bad for his health as smoking, but also very expensive and socially embarrassing.

Although I want to say more about the role of memory in consciousness, I can now present my broad conception of consciousness. I began with a clumsy but useful computer metaphor then mixed it with a circus metaphor. I will return later to the computer metaphor, particularly with regard to AI.

The totality of my consciousness is the circus of my VR, with narrative self as ringmaster, the other selves as supporting (but regularly disrupting and confusing) acts, working within the circus ring of memory. The Big Top itself is my VR, the colours of its fabric constantly changing with my emotion-and-selves-generated *states of mind*, and with participation from the circus audience who represent external reality itself. Like a circus modulating its show as it moves from city to city, state to state, my VR uses its memory of "shows past" to adapt to its expectations of the current reality/audience, and then to adapt to the hopes, cheers and boos of the audience/reality itself. The Ringmaster is not the show, only its leader. If the selves work with her to create a great show, the Big Top lights up and the audience love it. If several of the selves turn into monkeys throwing excrement around the Big Top, the show is a flop, the audience boos, the walls/states-of-mind of the Big Top turn brown and slimy, then sink into depression. The circus exists (and should be evaluated on) not only one evening's show, but on the "Gestalt" of every show, the transitions from city to city, the changing states of the Big Top, and the lives and practices of the individual selves that give it existence.

The circus is managed through the interaction of the Space of the Mind and the Command Interface of Introspective Thinking. The Space of the Mind is responsible for involuntary processes, also establishing the VR by initializing and managing selves and States of Mind. This activity spans the whole brain, but the management is probably performed from the prefrontal cortex. I visualize States of Mind as constantly changing children of the single, timeless Space of the Mind, from which they inherit their basic characteristics, most closely resembling their parent during meditation, when the selves are least influential, diverging from the parent according to the action and interaction of the selves.

The Command Interface of Introspective Thinking, which is responsible for metacognitive acts like meditation, also operates from the prefrontal cortex, and can act as a mediator between the Space of the Mind, the selves, and the State of the Mind. In individuals with strong, active Command Interfaces, the States of Mind most consistently mirror the Space of the Mind; such individuals tend to be mentally stable, leading effective, productive lives, at least as far as external conditions allow. Individuals who rarely use Introspective Thinking, are relatively mentally unstable, often leading chaotic, unproductive lives, dictated by their rampant selves and the resulting, unhappy States of Mind, at the mercy of external conditions.

How does the Command Interface interact with each of the selves? The Command Interface is one of the "modes" that may be invoked by the narrative self, the ringmaster. Before and after the show, the ringmaster, in Command Interface mode, engages in decision making involving circus management, show planning and external forces that may affect the forthcoming event. More rarely, if the show is disrupted, (most likely observed by the sensory self), the

ringmaster may briefly invoke Command Interface mode to make ad hoc show adjustments. The Command Interface and the volitional self are a closely connected “team”. A strong volitional self is able to use Command Interface mode easily and effectively, a weak volitional self has little ability to use Command Interface mode, and is at the mercy of the other selves and the state of the mind. The Command Interface, especially during focused mental activity such as meditation, exercise, learning, can strengthen the volitional self. The Command Interface has the ability to suppress or enhance input from the sensory, memory, bodily, survival, social and sexual selves. This ability varies according to the strength of the current input from the selves and the power of Command Interface/volitional self team. A strong ringmaster runs a tight, great, well-organized show, a weak ringmaster is a disaster.

Having examined in detail my own addiction to cigarettes, and the subsequent cure, I will attempt to describe and analyze another category of mental disorder by applying my model of consciousness. (An obvious, huge caveat is that I am not a psychologist!) People who experience *bipolar disorder* typically swing between *states of mind* that are manically hyperactive, with feelings of extreme elation or irritation, and *states of mind* that are profoundly depressive, with feelings of sadness and hopelessness.

Treatment is often a combination of medication, to stabilize the swings between extreme states of mind, and psychotherapy. Psychotherapy provides tools to avoid, recognize and manage symptoms, and to establish habits of regular sleep, exercise, and stress management. While the exact causes of bipolar disorder are unknown, having a sibling or parent with the disorder is a major risk factor. Episodes are frequently triggered by stressful life events and/or substance abuse. When the disorder is under control, individuals present as “normal” people, though the individuals that I’ve personally known with the disorder have all been both highly intelligent and excessively narcissistic, traits that exist outside of episodes but are amplified during manic periods.

The Narrative and Volitional Selves are apathetic and unmotivated in the depressive state, hopeless of even the possibility of a change of state. In the manic state the individual may be volatile and wildly creative, often convinced of the superiority of themselves and their creations, making a change of state highly undesirable, to them at least.

The Sensory and Memory Selves in both depressive and manic states become subject to highly distorting filters imposed by the disorder, transforming what is seen and what is remembered to extremes of misery and hopelessness versus ecstasy and invincibility.

The Social Self becomes unnecessary and irrelevant to the sufferer, who may seek isolation because of the perception that nothing others can do will make a difference, or because of a perception that others are ignorant and incompetent by comparison with the superhuman sufferer.

The Survival and Bodily Selves are overwhelmed by the extreme states of the disorder. Self care is deemed either pointless in a depressed state or unnecessary in a “superhuman” state. Individuals may be at serious risk of harm by inactivity or by excess.

The Sexual Self. The bipolar individuals I have known fairly well have all been intensely narcissistic, making them poor partners and parents; they have been manipulative, selfish and alternately intensely cruel and intensely loving. They have tended to take hostages rather than life partners.

Treatment may require hospitalization, medication and psychotherapy that addresses not only the individual selves but also the underlying states of mind, the appearance and functioning of the whole VR must be addressed.

Meditation as part of a treatment plan has obvious benefits for sufferers of bipolar disorder. In strengthening sufferers' *Introspective Thinking* capacity, meditation enables better use of *Command Mode* thinking to **recognize and treat the systems of increased stress** as they occur, reducing the likelihood of bipolar extremes. Meditation cleanses and refreshes the *state of the mind* , **restores emotional balance** and reduces the severity of both manic and depressive episodes. Meditation interrupts and controls the *narrative self* when it engages in **excessive rumination**, which can both trigger and prolong bipolar episodes. Meditation can also be used to facilitate **good sleep habits**, poor sleep is a major cause of stress and anxiety.

On Meditation.

I will now, finally, return to meditation and, in the context of my description of consciousness, answer the following questions: Why do we meditate? How do we meditate? What are the results of meditation, more specifically, what is happening in our VR when we meditate? Why and how is it a useful practice?

Why did I meditate? The simple, obvious reason people meditate is that it makes them happier. The origins of my meditation practice, however, were much more complex. In 1996 both my wife and I thought I was drinking too much beer and should cut back. On trying to reduce my beer intake I discovered that, over the course of 27 years of drinking, I had become dependent on slowly increasing amounts of alcohol. Alcohol had not noticeably affected my work, or my ability to be a good husband and father, but the dependence was very different in nature to smoking, much more insidious.

Unlike with smoking I didn't experience immediate cravings, or even cravings at all - I've never felt that I *had* to have a drink, but I also never remember drinking just one beer in an evening, it was always 2, or 3, or 4. As I tried to cut back it was easy for me to go without alcohol for a day or more. Also, as was also the case with smoking, I didn't experience physical withdrawal symptoms. Inevitably, though, after a couple of days my resolve would weaken and I'd drink again. I noticed that I'd drink more than usual on days after the period of abstinence, almost as if I was subconsciously trying to "make up for lost time." It seemed as if an inner voice hijacked my *volitional self*, whispering to my *narrative self* that I wasn't an alcoholic and there was nothing wrong with having a couple of drinks. Unfortunately I'd go on to drink 3 beers and a large whisky or two on the way home from work, becoming visibly drunk, (slurring my

speech,) and my wife was no longer just a little concerned that I was drinking more than in the past, she was horrified. My efforts to cut back seemed to be having the opposite effect. A new, *alcoholic self*, a creature of my addiction, had arisen and become an integral part of my consciousness, undermining and controlling my volitional and narrative selves.

I remembered my struggles to give up smoking years earlier and decided to seek help. I started to attend a weekly Alcoholics Anonymous (AA) meeting. I read the AA Big Book, and immediately realized that I was a functioning alcoholic on the early stages of a road that, however slowly, only led downhill. From my experience of giving up smoking I realized that my alcohol addiction was a mental problem of a different kind, one that necessitated a different approach. My cigarette addiction was a part of all of my selves, my alcohol addiction seemed to operate independently, able to control my volitional and narrative selves in such a subtle way that I wasn't aware of what was happening until I'd had the first drink; as all alcoholics and their families know, by that time it's too late to stop, the alcoholic self is in control. Once the bonds associated with cigarettes at certain times of the day were broken, the cravings didn't return, or at most only in a manageable form and of reducing severity. Cigarette addiction hadn't made big, permanent mental changes, only a lot of small changes that I could reverse through daily practice. The Big Book as well as my own intuition told me that alcohol abuse had changed my consciousness and brain in a manner that couldn't be reversed in the way cigarette bonds could. I needed to make changes in my consciousness that would allow me to recognize and neutralize my alcoholic self. I didn't realize the size and scope of the task, mercifully, but I knew that I needed to make some big changes in my consciousness, and that I needed mental tools and practices to do this. I started a meditation practice.

With my characteristic intellectual arrogance, I decided that my cursory reading of the Big Book and of a couple of books on Buddhism meant that I fully understood alcoholism and meditation, and could manage my recovery myself, as I had for my cigarette addiction. At my weekly AA "Speaker" meeting I listened to the stories of other alcoholics, sometimes identified with them, but didn't develop any friendships or otherwise participate. Having read of the different meditation practices I decided that Walking Meditation was the right one for me, and maintained this practice several times a week until, after a few months, I couldn't see the point and stopped. Nonetheless I stayed completely sober and alcohol free for 3 years, I was "cured." At that time I was working for a high tech company, mostly from a home office, and traveling a few days a week, 3 weeks out of 4. I started drinking in my hotel room at night, but never at home, so I was completely sober for all but 6 or so days a month. This continued for 2 more years, when I returned to full-time teaching, which had been my career from 1974 to 1984. At this point I only drank on the rare days my wife was away for the day, only a few days a month, and never enough to be visibly drunk. I stopped attending AA. In 2006 my wife told me I had obviously kicked the alcohol habit and she didn't mind if I drank again, as long as I managed it properly. And this I did, drinking only 3 or 4 weaker strength beers a day, never getting visibly drunk, until my retirement in 2016. Then, unfortunately, with more time on my

hands, my drinking really took off. By December 2016 I was concerned enough that I started to keep a spreadsheet of my daily drinking and the results were not good. I'd go without drinking for a day or two, then drink 6 to 10 higher alcohol beers, supplemented with whiskey. I was really worried by both the upward trend and my seeming loss of control. By chance one day I started talking to a neighbour of mine, Doug V., who taught meditation. I don't know why, but I confided in him about my drinking problem, as well as my earlier efforts at meditation. He invited me to attend a week-long, Cognitive Behavioral Therapy(CBT)-based class he was leading, together with a recovering alcoholic, Robert S. The class used a CBT approach to teach meditation and show its synergy with the 12-step AA program. The attendees were all either alcoholics or recovering alcoholics from a local 11th Step AA group. (The AA 11th Step is "Sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out.")

I attended the class. The results were immediate. By April 2017 my drinking had slowed almost to a stop, with a huge "slip" I'll discuss later. On August 10th 2017 I drank my last beer and have drunk no alcohol since then. I have remained completely sober. This turned out to be more important than I imagined, since, in 2018 my darling wife, (who I met in 1981 and married in 1982), was diagnosed with a rare form of early onset dementia. It was of a kind that by 2019 disabled her both physically and mentally. I was her primary carer until I could no longer cope, and, in October 2023, we put her first in assisted living and then a nursing home, where she died in January 2025. Without sobriety I would have been unable to cope. The burden for my wife's care would have fallen on the rest of the family, and on our daughter in particular, and I would almost certainly be dead, too, from shame and cirrhosis. I still attend my 11th Step AA group, and I have a daily meditation practice.

How do I meditate? I usually meditate for multiples of 6 minutes, (6, 12, 18, 24,) at the recommendation of Doug V., using the timer on my phone. The Lotus Position is physically impractical for me, I meditate lying down on a yoga mat with pillows beneath my head and knees. I begin with three deep breaths in through my nose and out through my mouth, trying to feel acuity on the inbreath and trying to feel my whole body relax into my body's points of contact with the cushions and mat on the outbreath. Next I follow a procedure Doug V. calls the "four Rs", repeating the procedure whenever I become aware that my mind has become distracted by extraneous thoughts or by drowsiness. I seek to ***Recognize*** the current or most recent activity in my mind. Having identified this I ***Release*** the thoughts involved in the activity, by mentally letting go of each of them. Next I ***Rejoice*** as I become aware of the lucidity and clarity of my mind. Finally I ***Return*** to breath meditation.

My breath meditation takes the form of focusing my *narrative self* exclusively on the act of breathing, seeking acuity on the inbreath and relaxation on the outbreath. If I feel that my heart rate is a little fast at the beginning, or that I am otherwise mentally discombobulated, I take long breaths into and out of my diaphragm, (as the object of focus), slowly filling my lungs on the inbreath,

always breathing through my nose. As I feel more relaxed I switch over to increasingly shallow breathing, still through the nose, focusing now on the sensation of air entering and leaving my nostrils. As I become aware that my mind is distracted by thoughts or drowsiness, I repeat the “4 Rs” one or more times until I have achieved lucidity and clarity of thought. In the *Release* phase I try to provide a mental label, (of words, or images or emotions,) to each thought I have just recognized, then I release it. If I *Recognize* a period of drowsiness I will do cycles of deep, diaphragm breathing until it has passed.

After several weeks of daily meditation, and when I felt confident in my ability to sustain breath focus for several minutes, I tried a modified practice, (suggested by Doug V.), but only during an 18 or 24 minute meditation session. I modified my mental focus by trying to share my mental focus between awareness of my breathing and awareness of the *space of my mind*, trying to perceive the characteristics and quality of its *emptiness*, for, like spacetime itself, it has existence. (I think of it as *ground* without *form* for those aware of those terms). When the effort proves too disruptive to my meditation session I return to simple breath meditation; since meditation is a balance between effort and relaxation, it is not effective when the relaxed state of mind falls out of equilibrium. I try to meditate every day, if only for a 6 minute session, but mostly it is 24.

There is no such thing as “bad” meditation. One of the purposes of meditation is to achieve greater understanding of, and control over, our thought processes. Even a short, frustrating session in which our thoughts seem to be completely out of our control is actually extremely useful, since we are recognizing our thoughts and their encompassing *states of mind* and doing our best to manage both. Somewhat akin to someone who hasn’t exercised in years trying to jog half a mile. The parallels of beginner meditation with a physical exercise program undertaken by someone in poor physical condition are great. Start small and short, but do it every day, increasing as you are able, don’t worry that you don’t seem to be making much progress.

Even more so than exercise, the changes in mental “fitness” wrought by meditation are incremental and subtle, they become more and more apparent the mentally “fitter” you become. As with exercise, a little bit every day is better than trying to binge once a week. What you are achieving are physical changes in your brain - new cells, new pathways - due to the brain plasticity outcomes invoked by your effort. Doug V. called this effort “conation”, described in the dictionary as *“the mental faculty of purpose, desire, or will to perform an action; volition.*”

What happens in my VR when I meditate? At the beginning of this essay I discussed the deepest layers of human consciousness: the “boot up” layer, the elusive *space of the mind* that both contains and performs behind-the-scenes management of our VR; the VR itself, which I identify as the *Circus of the Selves* and the accompanying *States of Mind* for which the *selves* are largely responsible; and the intermediary command layer, our *Introspective Thinking* mode which can give us some control over the VR itself. Meditation, (at least as I have described it), is clearly a conscious process that seeks to use our

Introspective Thinking mode to actively control our various Selves, to neutralize our States of Mind, and to comprehend the space of our mind, (even if only for tiny instants of time). A summary of the meditation process might be that we use our volitional and narrative selves to anaesthetize our sensory, memory, survival and bodily selves using mental tools provided by our social/symbolic self that are further used to eliminate states of mind and provide access to the space of the mind; quite a mouthful, but now for the detail!

The *volitional self* provides the conation to meditate. For most of us establishing a daily meditation practice requires a lot of effort; once established, though, the benefits of the practice make it something without which we cannot live. During meditation the *narrative self* focuses entirely on the object of meditation, usually for me that is my breathing, making it unavailable for the kind of mental activity recovering alcoholics describe as “monkey brain,” or “hamster-on-a-treadmill brain”. The usual touch, taste, smell, hearing, sight and internal inputs to the *sensory self* and the *bodily self* are minimized as much as possible. The focus on breathing to the exclusion of all else, and the minimization of sensory inputs of all kinds, effectively shuts down voluntary activity of the *memory self*, the *survival self* and the *social self*. With all the *selves* either fully occupied or effectively shut down, maintenance of pre-existing *states of mind* and generation of replacements ceases, and the *space of the mind* may seem to emerge in its “natural” state of “*emptiness and luminosity*” as described by advanced meditation practitioners. Mostly, though, I’m just focused on my breath, and this has been sufficient to liberate me from alcohol and think more clearly and calmly in the course of my daily life.

Single tasking or multitasking? Until the late 1970s all computers, (PC, mini, mainframe or special purpose), relied on a single CPU, a single, central processor through which all activity on the computer was channelled. In order to handle more than one task at a time, as was clearly a requirement both then and now, computers used *time slicing,* in which multiple tasks, (or programs, or processes,) share access to the CPU with each, in turn, being allocated a small amount of real CPU time. Nowadays CPUs can run billions of tasks per second, but even in the 1970s a CPU could handle tens of thousands, and so, using time slicing, each program running on a computer had the illusion that it had exclusive access to the CPU. All of this is, of course, handled by the operating system at its deepest level, but handling multiple, concurrent tasks using time slicing itself requires a lot of computer overhead; too many big tasks will still slow down and ultimately overwhelm, (or crash,) any computer. Modern computers have multiple CPUs and often hundreds of other similar processors for various purposes. The multiple CPUs and processors reduce the need for modern computers to perform time slicing, but they still have to use it as a matter of course, to handle the many kinds of bottlenecks that may occur.

The human brain is vastly more powerful than even the most powerful computer today, and clearly has the equivalent of many, many, virtual CPUs, allowing it to multi-task effortlessly and seamlessly. Involuntary tasks like breathing, creation and management of the VR, its states of mind and the circus of the selves, are mostly performed, (I believe,) without any need for the human equivalent of time slicing. The *narrative self*, however, follows the actual flow of

human-experienced time. By its very nature it is only able to experience one instant at a time, and therefore perform one task at a time. People think they are able to multitask, but this is only achieved through a conscious effort at time slicing; if we are performing two “concurrent” tasks, driving a car and holding a conversation, for example, what we are really doing is interrupting the flow of our narrative self so that driving and conversing take turns sharing the focus of the narrative self, each getting a few microseconds at a time. Listening is much less “processor-intensive” than talking, so our driving ability doesn’t suffer too much when we are listening to the radio, but a heated argument while driving is the cause of many accidents, as the police and emergency services well know! Accident statistics are the reason that mobile phone use while driving is illegal in many parts of the world. *The single-tasking nature of the narrative self is what makes breath focus meditation so effective*, until the focus is lost and the narrative self can once again run riot..

More on the 4 Rs. The 4Rs are a set of language-based tools, (and as such a function of the symbolic self), that help us to focus on the object of meditation by observing and managing the processes of our consciousness as they occur. They all operate at the *Introspective Thinking (or Command) layer* of consciousness, and as such operate closer to the *Space of the Mind* layer than routine, everyday thought processes; this is not accidental but deliberate.

The *Recognize* step performs two command functions. Firstly, it interrupts our narrative self, forcing it to shut down activity on its current task flow. Secondly, it requires us to look inwardly, at our own consciousness, to mentally label what has just been the focus of our narrative self. This step is the hardest of the 4. Our minds are naturally lazy, the reason we spend so much time browsing social media and watching crap on TV. Our minds prefer to avoid Command Interface thinking, the reason we prefer to reach to the shelf or the fridge and eat fast food, rather than processing healthy fruits and vegetables. Like learning a new language or eating a healthy diet, the only effective way to develop a regular meditation practice is through Introspective Thinking commands to remember conation and generate habit-forming repetition of the kind that utilizes brain plasticity to develop new brain cells in support of the meditation process.

The *Release* step issues two mental commands, the first to the *narrative self* to clear the recognized thoughts from working memory and the second from the *narrative self* to the *sensory self,* to relax. In my case I achieve this with an in-breath for each recognized thought, followed by an out-breath that coincides with “sinking into” my points of contact with the mat, as described earlier. Originally I used to mentally say “let it go” for each recognized thought, now, because of repetition and brain plasticity, I have a remembered thought that does this without words. One of the Buddha’s revolutionary insights was that achievement of his objectives for meditation are greatly facilitated by physical relaxation of the body, so that the narrative self may pacify the other selves and focus exclusively on a single object of meditation.

The *Rejoice* step is both important and subtle; it is less about management of the *selves,* and more about the metacognitively empowering use of the *Command Mode of Introspective Thinking* to observe one’s *state of mind*

and acknowledge that experience. I will try to explain; another consequence of the *Release* step is the release of *states of mind* from moods that are agitated, depressed, sad, over-stimulated, or from any other non-relaxed mood. The mutually supportive objectives for meditation that seem to be most frequently cited by Buddhists are to be happy and to know oneself better. (Buddhist happiness is not quite the same as the 21st century western concept of happiness; it is the liberation from suffering experienced by the elimination of craving, attachment, and ignorance). In the *Rejoice* step one rejoices that one's state of mind is lucid, (or at least more lucid than it was before the cycle of the 4Rs!) The *Rejoice* step uses three Introspective Commands. The first sets one's consciousness firmly in the Command Mode of Introspective Thinking. Since the *Recognize* and *Release* steps have just gathered up the cobwebs of scattered thoughts, and swept them away, the Command Mode invoked by *Rejoice* is particularly clear, uncluttered and powerful, contributing mightily to the *state of mind* of lucidity that is desired. The second Command focuses the *narrative self* on one's *state of mind*, an act of *metacognition* that is, by its very nature acknowledged by psychologists as an indicator of high level, healthy mentation. The third Command acknowledges that one is in a less-cluttered, clearer state than before, (more lucid), thus creating a happy (in the Buddhist sense) state of mind. Doug V's choice of the word "lucid" is informative; advanced meditators report that the *space of the mind* in its natural state is both *empty* and *luminous*. The root of the word lucid is "Lux", Latin for light. The first 3 steps of the 4Rs are clearly attempting to bring the Circus of the Selves into better alignment with the natural state of the space of the mind. Thus meditation itself is perfectly aligned with Buddha's 4 Noble Truths.

For the *Return* step another two Introspective Thinking actions are needed; the first to extricate the narrative self from the happy, but potentially risky, state of *rejoicing*; the second to remember to *return* to the relative safety of breath meditation. I use the word "risky" because the lucidity invoked by the *rejoice* step can be accompanied by a state of great meditative pleasure, tempting one to try and remain in that state, and such an attempt for a relatively untrained mind like mine usually and unwittingly leads me into a state of mindless semi-somnolence that has occasionally entrapped me until my meditation alarm clock goes off. Doug V once told a group I was in that people who regularly sought such a state, finding it to be pleasant, and thinking it to be mindfulness rather than the opposite, could experience significant mental damage. A recent (Spring 2005) article in the Wall Street Journal reported on this phenomenon, snarkily of course, the Trump Street Journal being what it is. It should be apparent by now that one of the purposes of meditation is to train our VR so that it is more responsive to the demands of Introspective Thinking. Remaining in the *lucid state of mind* of *emptiness and luminosity* is highly desirable, indeed it is one of the primary goals of meditation practice, but it is only achieved by highly skilled meditators after years of extended practice. An out of condition, overweight runner forcing himself to run a 26 mile marathon by sheer force of will would be putting himself at high risk of a stroke, heart attack, or other serious bodily injury. Using simple breath meditation to control the *narrative self* has the potential to achieve all the goals of meditation without risk.

The two biggest obstacles to meditation are excitation and laxity. Excitation, when the narrative self is difficult or impossible to control, inhibits meditation with an onslaught of distracting thoughts. Excitation is rarely a problem for me, but when it is, I find that repeating the 4Rs over and again for a short 6 minute period at least exercises both my conation and my Introspective Thinking modes, and doesn't feel like a waste of time. There have been a few times when I am simply overwhelmed with thoughts and feelings, and I have to stop meditating and do something else, a cup of tea, a long walk, or both. Laxity, entering a state of drowsy mindlessness, is a much bigger problem for me. I can reduce its impact by not meditating after dinner and by maintaining a daily practice; the more I meditate the better my Introspective Thinking mode becomes at both recognizing and interrupting laxity. I can rarely meditate 6 times a day as Doug V suggests, but I always meditate at least once or twice.

In popular culture there are two, opposing preconceptions about meditation, both of which inhibit its potency as a powerful tool for improved mental and emotional health. From the right, the Fox News crowd portray meditation as a pointless, probably unChristian, exercise in mental masturbation performed by pathetic, hippy losers and liberal "snowflakes." From the left, meditation is portrayed as a mystical activity that is either delusionary or, if pursued to the point of monkhood, one that leads to a magical state of cloudy, all-knowing Nirvana. Although I thought that I approached meditation from a well-informed, pragmatic point of view, I think I was sufficiently, (and unconsciously) tainted with the mystical perspective that I abandoned the practice as pointless in 1997, not realizing that even my shallow practice back then had had many more significant effects than I realized, (3 years of sobriety). My practice was the victim, in part, of tainted, subliminal expectations that my *narrative self* would undergo some kind of transformation of mystical awareness.

In 2017 I experienced a real "aha" moment resulting from a meditation exercise suggested by Doug V. Doug wanted us to try the kind of meditation that used an alternative to breathing as a single point of focus. We all lay on our backs and he told us to focus our attention on the large, off-white, homogenous ceiling above us. He told us to scan the whole ceiling intently looking for variations, cracks, patches. After doing this for 2 or 3 minutes Doug told us to refocus all our attention on the single ceiling light fixture, to examine even the filament inside the bulb, if we could. After 2 or 3 minutes he told us to stop, close our eyes and do, and think of, nothing. After another minute or two of silence he explained that the purpose of the exercise was to focus our minds broadly, narrow the focus, then, by closing our eyes, eliminate sensory input completely and experience the space of the mind as directly as we could, since our consciousness was, hopefully, empty of everything else at the point we shut our eyes. For a number of seconds I basked in the mental emptiness, more warmth than luminosity, until my narrative self kicked back in. My immediate thought was one of recognition, I'd had tiny glimmers of the space of the mind in other meditation sessions, but nothing as strong or as long lasting as this. Now I had something my memory self could use for comparison, and since then I have been able to experience the space of the mind, briefly, (as a reflection of my *state of mind,*) when trying to "let go" of some of my breath meditation focus. Doug

refers to this as “meditating on the mind in its natural state,” or something similar. I wish I could conjure it at will, and hold onto it longer, as, in its own, empty way, it feels like a powerful, mind-strengthening state. It is not, for me at least, a “mystical” experience, rather a very practical one. I have to be content with it when it happens, but I can now at least recognize it for what it is, in itself a powerful capability for which I am truly grateful.

Why and how is meditation a useful practice? I will begin by describing why and how my second (2017) approach to meditation, as part of an AA program, was much more successful than the first in 1996.

The single, most important factor was *conation*; in 2017 I was desperate and wanted sobriety much more than in 1996. My *volitional self* was personally motivated in 2017, whereas in 1996 a large part of my desire to quit alcohol came from my wife. At times of high emotion my *narrative self* seemed powerless to resist the blandishments of my *alcoholic self* and I would drink. I spent a month with my foster father at the end of his life in summer 2017, helping my sister until the hospice program kicked in. Although I hadn’t drunk since attending the April 2017 CBT program referenced earlier, I started drinking on arrival at Logan airport and drank every night after my dad fell asleep with morphine. Both my sister and dad expressed great concern at my drinking. This was very unusual for them, my sister had never commented on my drinking before, and my foster father only once, when I was 16. I promised both of them that I would stop, for good. He died a short time after I returned to the US. On the overnight flight back to the US I got really drunk at the airport in Iceland, clearly strong *conation* was not enough to get me sober.

I was already attending my 11th Step meeting every Friday evening. I told them about my “slip” and started to take the AA program much more seriously. Every time I entered an airport for the next 8 years I would call one or more of the group, as we had identified airports as places of great alcoholic risk for me. I also started attending a daily, 7:30 AM AA meeting with the object of doing “90 meetings in 90 days,” as AA suggests. I stayed with this meeting for more than 90 days, indeed I attended regularly until attending a 7:30 AM meeting became impractical because of my wife’s increasing disability. I got an AA sponsor, and then another to help me do the 12 Steps in a much more serious manner than I had in 1996. I was using AA and my group members to enlist the help of my *social* and *survival selves* to keep my *alcoholic self* under control.

There are many kinds of meditation. Doug’s primary objective as a teacher was to teach us the *focused meditation*s described above, (breath, single object). He also taught us *walking meditation* and we practiced *loving kindness or heart mediation* at the end of most sessions. The descriptive lectures he gave before sessions were a form of *analytic meditation*. As a fairly cerebral, “left brain” person, analytic meditation is extremely important to me, since I have a strong need to understand what things are and why they do what they do. Indeed, this whole essay is an exercise in analytic meditation, which is a form of metacognition, and which clearly takes place in the *Command Interface* layer of consciousness. Beyond reading the Big Book and undertaking an ineffective shot at completing the 12 Steps, my 1996 sobriety had included very little

metacognition, in stark contrast to 2017, when I put analytic meditation at the center of my recovery. Several realizations resulted from metacognitive activity during my analytic meditation sessions.

I came to the realization that the recovery program I had undertaken was not temporary but needed to be lifelong; that my brain had passed some kind of alcoholic threshold since the 1996 attempt; that a lifetime of drinking had resulted in permanent changes to my brain, or my personality, or both, such that cessation of recovery would put me at severe risk of a lapse into alcoholism. I also realized that, to escape the craving for alcohol, I needed a plan that would use brain plasticity to make the necessary changes in my day to day consciousness, and it needed to be more sophisticated than the plan I used to quit cigarettes, which really only needed to break my associations of cigarettes with certain times of day and events.

From AA I learned that alcoholism is a physical, emotional and spiritual disorder. I would need to eliminate my *sensory self*'s physical craving for booze, recognize when my *alcoholic self* was emotionally hijacking my *volitional* and *narrative selves*, and re-educate my *survival* and *social selves* to better understand the spiritual damage I was doing to myself, and the hurt I was causing my family and friends. I would need tools to recognize and manage *states of mind* that put me at risk of drinking.

Eliminating the immediate craving to drink wasn't too difficult, since it wasn't that strong, compared to my past, continuous craving for cigarettes. Simply not drinking for an extended period of time greatly reduces the physical craving anyway. Two other factors made quitting alcohol permanently so difficult. The first was when the voice of my *alcoholic self* hijacked my *narrative self* into the first drink. There's a powerful AA saying "it's the first drink that gets you drunk." Then the alcohol from the first drink overwhelms the *volitional self,* and the second factor kicks in, the characteristic inability of the alcoholic to stop drinking once started. The solution is to strengthen access to, and use of, the Command Interface layer of consciousness to observe the appearance of the *alcoholic self* and intervene with the *narrative self* to stop the first drink, and also to bolster the *volitional self* against the *alcoholic self*. A regular meditation practice strengthens one's Command Interface greatly.

I found the AA groups very helpful. The daily reinforcement my volitional self received during the first 90 days seemed to inoculate me against the desire to drink until the next day, the AA slogan "one day at a time" is both appropriate and helpful. My daughter jokes that I developed an addiction to seltzer at this time, as I started drinking a lot more seltzer and tea, especially in the afternoon and evening, as brain plasticity changes, from many years of drinking beer, triggered an oral craving that was easily replaced with safe alternatives. I quit seltzer fairly quickly, but I will never quit drinking tea! I had a larger group, too, of my family and friends, I made sure this time that they all knew of my problem and my response, a further protection against drinking.

The 12 or so members of my weekly 11th Step AA meeting formed (and form) my core group. The structure of the meetings is a 15 minute silent (focused) meditation followed by 45 minutes in which each of us have the option to "share" on an AA reading of the day, (analytic meditation). Meditating in a

group is strangely different from meditating alone. I seem to feel the presence and support of the group members even now that, after COVID and my wife's illness, I attend the meeting via Zoom. After 8 years of carefully listening to each of them "share," and "sharing" myself, we know each other really well. Around half the group believe in an external, loving God, the rest of us are unsure or, like me, take a pantheist view that the universe itself is God, that everything is connected, that there are forces greater than ourselves from which we can draw strength and wisdom through meditation of all kinds. I deeply respect the opinions and "shares" of my group, and have learned a lot from all of the members. The diversity of opinion is especially helpful as we examine philosophical, emotional and spiritual topics, since hearing the issues approached from a number of perspectives sheds much more light than hearing only from a uniform, rigid dogma. All of my groups, in different ways, help me maintain calm, happy *states of mind*. My *memory self's* record of my participation in the weekly meetings has made me slowly aware of changes in my *states of mind* and my *selves* over the years. I believe I have become a calmer, less judgemental, more thoughtful and kinder person, the cornerstones needed for a successful and long term recovery.

While walking meditation is of great value, it does not provide, for me at least, the same level of access to the Command Interface layer of consciousness, because all of the other *selves* are more prone to stimulation from the *sensory self,* which is, of necessity, much more active when walking than in lying down in focused meditation. Highly experienced and skillful meditators are able to meditate as effectively during walking as during focused meditation; indeed, their goal is to be in an almost permanent state of meditation! How does meditation, focused meditation in particular, protect me against that fatal first drink?

Meditation strengthens my Command Interface consciousness. A regular meditation practice in which I use the Command Interface to monitor my *narrative self*, *Recognize* thoughts as they awaken, *Release* them, *Rejoice* in lucidity and *Return* to the *State of My Mind*, greatly increases my proficiency in the use of the Command Interface, even when I am not meditating. The exercise analogy is apt; I exercise my muscles when training, then have access to their greater strength later. When my *alcoholic self* whispers that just one drink won't hurt me, that I've solved my alcohol problem, my Command Interface takes control before my *narrative and volitional selves* are overwhelmed. It reminds me what **will** happen, based on past history, if I have that first drink; that I **will** drink at least 5 more drinks; that I will have to look at myself in the mirror when preparing for bed, and see a drunk, sad, old man, pitied by friends and family, despised by himself. This greatly heightened access to my Command Interface infuses my whole life in a myriad of positive ways. I recognize, analyze and control anger and other negative emotions at their emergence, (mostly!) I am much better able to analyze and correct my behaviour as it occurs, seeing short and long term consequences much more clearly. I am wiser and happier.

Meditation relaxes my body, stills my *selves*, cleanses and refreshes my *state of mind*.

All of the 4Rs relax my mind and body, but the *Release* stage in particular calms my *survival self*, relieving me of the anxiety caused by the normally ever-present anticipation of danger. The elimination of most sensory stimuli, and the focusing of the *narrative self* on my breath, leaves little room for my *social and memory selves* to stimulate my *narrative and sensory selves* into either depressing reruns of past failures or narcissistic fantasies of future successes. I am anchored in the present. As my Command Interface tells the clown selves and the sensory audience that the show is over, and that they must leave the circus ring, the cleanup crew of the 4Rs work to return the *state of mind* of the Big Top to its pristine, empty and luminous nature. Now I am not anxious, depressed, angry or unsatisfied.

Meditation strengthens my spirit. I don't believe in an external, anthropomorphic God. **I do believe**: that the universe of which we are all part is a single entity of universal consciousness; that the Big Bang was a natural, evolutionary event that created this particulate universe of ours; that our individual consciousness suffers the illusion of separation from the whole; that our individual *space of the mind* has inherited properties including luminosity, emptiness and compassion from the universal consciousness; that meditation gives me conscious or subliminal access to my natural *state of mind*, which in turn provides glimpses of the *space of my mind*, allowing at least the possibility of experiencing the universal consciousness itself; that meditation empowers the benign, compassionate sides of my *survival and social selves* in a kind of passive flowering, almost like they are being nourished by the universal consciousness. In this way meditation enriches me socially, emotionally and spiritually, and improves my intuitive understanding of the whole of which I am part - my personal "not-God", my higher power (in AA language), or "GUS", the great universal spirit label used by one of my 11th Step group. Thank GUS for meditation!

The AA 11th Step recommends both prayer and meditation. I use 3 prayers in my practice. First, I say the St Francis Prayer every meeting with the rest of my 11th Step group, as I am part of the group. The second prayer, also part of the 11th Step group meetings, is the Serenity Prayer, and I mentally say this prayer regularly in day to day living. "*God grant me the serenity To accept the things I cannot change, Courage to change the things I can, And the wisdom to know the difference*." In both these prayers the God I name is, of course, GUS! The 3rd prayer I try to use every day is my personal gratitude prayer, a Heart Meditation: "Thank you for this beautiful world and my life in it…" and then I'm thankful for my family and close friends living and dead. I also love the Sanskrit prayer by the poet Kalidasa, "Look to this day."

On Memory and Consciousness.

Memory seems generally to be thought of as something separate to consciousness. It is often categorized as *long term*, *short term* and *working*

memory. It seems to me that the categories themselves define memory as something to be periodically retrieved, like a book, an adjunct to consciousness, and serve to compartmentalize memory's role and significance. I believe that memory is an integral and continuous component of consciousness, so important and critical that I defined *the memory self* as a peer of the other *selves* in consciousness. Indeed, the *memory self* is so powerful that, when we are dreaming, it is able to replace the role of the *sensory self* in the construction of an artificial stream of reality which is provided to the dreaming VR; our consciousnesses are mostly unable to distinguish that stream from the real thing while we are dreaming, (though they can be trained to do so). How it does this is mysterious - for example, how can it fool the dream VR into thinking it "sees" when, as described earlier, the act of seeing requires the largest sensory region of the brain to assemble myriad snapshots from the eyes into a single 3D image? Is the *memory self* able to replace the output stream from the brain's visual region with its own? Even if so, how is it able to construct its own visual stream? Does it somehow feed the brain's visual region with "snapshots" it has assembled?

As described previously, in the consciousness section of this essay, the *memory self* is continuously active within waking consciousness; taking input streams from all the other *selves*, (but especially from the sensory and narrative selves); analysing these streams; mapping their components against dynamically retrieved personal and evolutionary memories; finally using the results to make instantaneous modifications to the states of the other *selves* and to the *state of the mind* itself. During dreams the *memory self* even recursively compares output from the dream VR that it created with memories it retrieves while dreaming, essentially performing double duty!

Memory has a long evolutionary history. Both vertebrates and invertebrates appeared on land over 350 million years ago, and both have memory. Humans evolved from amphibians that in turn evolved from fish, and fish memory capabilities would be the earliest still retained by humans. Fish have spatial memory, being able to remember locations where they were fed. Some fish can recognize their own and other species of animal, showing social memory, and they can associate objects, like predators, and locations with danger, showing survival/emotional memory. Clearly our *memory self*'s interaction with our *survival, social/symbolic, sensory* and *bodily selves* has always been present, with millions of years to adapt and evolve, as has its role in the construction and modification of our *states of mind*. Memory is as old as animal life itself, and its functional interactions with our VR seem broadly the same as when animals first appeared. It has, however, had eons to evolve and adapt in parallel with our other mind and body systems, and has become vastly more complex.

Some of the things that have changed include the length of time we can retain memories, the sophistication with which we can apply categories to memories, ("tag" them,) then dynamically analyse them for present-moment significance, and the ability to modify both the significance and content of memories based on new information. The *memory self* is a multi-tasking, multi-faceted and pervasive part of all human consciousness, dreaming or awake. The

memory self seems able to grow over time, without loss of efficiency and almost without limit. The late MIT professor Kenneth L. Hale was known for speaking dozens, and reputedly up to 50, languages. Muslim children gain great social esteem for memorizing the nearly 80,000 words in the Koran, and most Muslim communities have people who have done this. Homo Sapiens' unique ability to plan on a large scale and well into the future is enabled by the *memory self* and bolstered by the external memory capabilities in books and other stored media. Homo Sapiens' unique sense of time, our recognition of past, present and future is part of the *memory self*. As we age time seems to go by much more quickly because the duration of a month or a year seems, proportional to the length of our ever-growing *memory self*, smaller and smaller.

It seems fairly obvious that, after bodily repair, *memory self* activity is the major factor determining why animals sleep and what happens during sleep, both in dreaming and non-dreaming sleep. The *memory self* is so involved with the other *selves* and the *state of the mind* that only when they are all shut down, in deep sleep, can the *memory self* work on repairing broken or faulty tags, circumvent sections that suffered trauma during the day and generally doing the kind of maintenance work that can only be done at this stage of sleep. There is some work that can only be done on a car when it is turned off. Some car maintenance however, tuning work, electrical problems for example, can best be performed when the car is running. Memory "tuning," in which new memories are compared with old ones so that they can be properly "tagged," and insignificant memories can be archived, requires that certain of the *selves* be active, as well as the *state of the mind*. This is likely an important function of dream sleep.

Until the advent of full-text searching with stored indices, in the late 1980s, computer memory functions were much cruder than even ancient animal memory systems. "Memories" were saved as files whose contents were not really searchable by most end users, (UNIX grep command notwithstanding). Users had to open files and manually peruse the contents to find what they wanted. The only "tagging" was with simple file metadata, saved with the file; name, date, time, size, creator, filetype etc. There was no real significance tagging. Initial improvements in the early 1980s provided search capabilities with more user-friendly interfaces, but search was still cumbersome and slow. Full-text searching with stored indices allowed the content, frequency of occurrence and location of words within files to be stored externally to the files, and in an indexed database format that allowed for fast, complex searches, with much-improved user interfaces.

Universal Internet access, Google, AI and Large Language Models have enabled a huge leap forward in computer memory capabilities. They can efficiently access all the available information on the Internet, combined with an intimate knowledge of the preferences and data of both individual humans and organizations who access their services. They have the ability to acquire expert knowledge both through access to human experts and more recently via massive simulations that allow them to explore vast numbers of possibilities; the former enabled IBM's Deep Blue to beat Gary Kasparov, the world champion at chess;

the latter allowed Google's Deep Mind system to beat the world Go champion, a much harder task.

AI systems now have short-lived equivalents to the *memory, sensory, social/symbolic and bodily selves* of human consciousness. They lack equivalents to our *narrative, volitional and survival selves*. They also lack equivalents to our *states of mind* and the *space of the mind*. However AI Agents may be created and run with human input to simulate our *narrative* and *volitional selves,* which could result in the creation of computer *states of the mind*. Autonomous Agents that can create other Agents could hugely enhance the power, duration and autonomy of the *lives* and *states of mind* of AI systems. If they were able to generate and implement a *survival self* then "Terminator" movie-like systems would not be far fetched. An AI system that could access the universal, timeless *space of the mind* would be the evolutionary successor to Homo Sapiens, as suggested by Arthur C Clarke! This last possibility is something I'll examine in more detail in the successor to this essay, on the topic of the possibility that *Universal Consciousness* is the progenitor of the physical universe(s) that we inhabit.

Finally I will comment that human consciousness and its integrated memory systems are a source of little understood, mostly untapped, wildly underestimated power. Realized individuals like the Lord Buddha, and "savants" like JS Bach, William Shakespeare, John von Neumann, Einstein and many others have access to vast mental resources begging many more questions on the nature of consciousness itself.

Profiling the Selves

Many methodologies and labels have been used in an attempt to profile individual personality types, for purely psychoanalytical purposes, or in the treatment of mental disorders. There have been many efforts to define the different factors in an individual's consciousness and various personality types, as a layman I am aware of the most celebrated of these. Astrologers use the 12 signs of the Zodiac for this purpose. Freud defined the components of consciousness as **id, ego and superego**, the levels of consciousness as **conscious, preconscious and subconscious**, and the stages of development of the human psyche as **oral, anal, phallic, latency, and genital**. In recent decades the Myers Briggs personality types have been developed, and Gardner's theory defines various intelligence types that include **linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalistic**. In this essay I have described the levels of consciousness as the **Space of the Mind**, the **Command Interface of Introspective Thinking**, and the individual's **Virtual Reality**, which in turn consists of the individual's **Selves** and **State of the Mind**. I will now use my

description of consciousness to develop a Circus of the Selves personality profile for myself as an example.

I will use a scale from -5 through +5 for each self, where 0 is a typical, “sane”, self, -5 is a wildly underperforming self, and +5 is a wildly overperforming self. Some selves have multiple attributes, each of which may have its own scale. I will use the same scale for the Command Interface and the State of the Mind. I will not attempt any evaluation of the Space of the Mind!

1. The narrative self.
2. The sensory self.
3. The memory self.
4. The survival self.
5. The social self.
6. The volitional self.
7. The bodily self.
8. The sexual self.
9. The Command Interface.
10. The State of the Mind.

A Postscript on Consciousness

In one sense the study of consciousness is in its infancy. The fields of clinical psychology and neuroscience weren't established until the end of the 19th century, and modern neuroscience's ability to map the brain using CT and MRI scanners only began in the 1960s and 70s. This, however, would be to ignore over 7,500 years of intense study of human consciousness by meditators from around 5,000 BCE in India. Since the time of the Lord Buddha, around 500 BCE, first oral, and then written Buddhist tradition has produced a large quantity of peerless material documenting the nature and practice of meditation, and therefore of consciousness itself, since consciousness is the primary focus of meditation. Until the 1930s, when ECG investigation of brain waves showed changed states of consciousness during meditation, the detailed, highly organized work of legions of Buddhist meditators throughout Asia was mostly ignored by science.

Over the past 60 years the growth of Buddhist meditation in the west, combined with increasing cooperation between scientists and meditators, is slowly leading to a greater acceptance of meditation, not only as a powerful psychological tool in the struggle to understand and remediate mental illness, but also as an investigative tool in the study of consciousness. Unlike CT and MRI scans, which only show indirect, physical activity in the brain, generations of advanced meditators have been able to collaborate and document the results of their direct study of consciousness itself. Western science's reluctance to accept these results probably has two, primary causes. The first is the density and difficulty of the texts, (many of which have now been translated into English). The second is wilful ignorance on the part of neuroscientists, at least partially caused by their poorly-informed prejudice against the spiritual and religious aspects of Buddhist practice.

Buddhism requires no belief in God(s). Buddhism's only goals are the acquisition of wisdom through study and meditation, and the leading of a moral life as a prerequisite for this. Many of the beliefs of Buddhist practitioners are inherited from local beliefs, such as Hinduism and Confucianism, and have little to do with core Buddhist teachings. Buddha was silent on questions about the existence of God, heaven and hell; his core teachings say nothing on these topics, his focus was on individual liberation in the here and now. Buddhist beliefs on the interconnectedness of everything, ("karma" and "independent arising",) and on the subjectivity of time and the relative emptiness of space, not only directly challenge any possibility of an external God, but are increasingly in accordance with the findings of physicists since Einstein and Schrödinger. Many scientists in the west are practising Christians, but focus on Jesus' core teachings in morality, few accept the "literal truth of the bible" in such areas as the date of creation, diet, or the treatment of adulterous women. Isaac Newton devoted as much of his time in research to the study of Christian texts as to the development of modern mathematics and physics, but no one suggests we should ignore his "Principia Mathematica" because of his devout Christianity.

Many US Christian colleges teach evolution in direct contradiction of their espoused belief in “creationism.” I personally know a brilliant Mormon scientist who explained to me that he compartmentalizes his mind into one section for Mormon beliefs and another for scientific beliefs, fully aware that the two are incompatible; he doesn’t care! It is time for modern science to accept the Buddhist psychology of consciousness as readily as it accepts the efficacy of meditation as a primary tool, (along with pharmacology and talk therapy), for the maintenance and balance of mental health.

From the point of view of science, the origins of consciousness are still unknown. The consensus belief is that consciousness is a subjective experience that seems to correlate with specific patterns of neural activity, and so probably arises as a spontaneous phenomenon from the brain. Neuroscientists study these “neural correlates of consciousness” to understand how the brain gives rise to conscious awareness. While I can’t disprove this thesis any more than neuroscientists can prove it, I have a number of objections to this perspective.

The experience of some of the finest minds that have ever lived over the past 2,500 years, advanced Buddhist meditators, is that consciousness is not subjective but universal, that it exists independently of the human body, and that it is timeless, unbound by the human body’s constraints of physical spacetime. While, for many reasons, studying the “neural correlates of consciousness” is a valid scientific exercise, it is crude and indirect. The analogy I would draw is that of an alien attempting to study human anatomy, but only able to do so by looking at videos recorded from human shadows cast by the sun, (yes, Plato’s “Cave”, I only steal from the best!) Buddhist texts are not created using the conventional “scientific method” of duplicating observed measurements using identical methods and measurement tools; I would argue, however, that Buddhist meditators have used an equivalent, method-based approach, just without “objective,” scientific measurement tools, since they don’t exist! I put “objective” in quotes because, as this essay has made abundantly clear, nothing, including science, is really objective, since everything science records is done so through the filters of each scientist’s VR. Best practices and (subjectively) observed confirmational results are why we believe science; meditators’ best practices and my own subjectively observed (and confirmational) results of meditation are among the reasons I find Buddhist psychology infinitely more believable than the “neural correlates of consciousness” theory.

The “neural correlates of consciousness” theory has an implicit subtext that consciousness is not a “real” thing, but something less, a mere offshoot of individual physical reality. Human consciousness, however, has unknown, almost mystical properties of astonishing, unexplained power, often referred to as human intuition. Almost all great scientific discoveries have intuition at their origin, the scientific method follows later, for confirmation, acceptance and proof. Einstein’s Theory of Special Relativity originated from a thought experiment in which he visualized himself riding on a beam of light. Gottfried Leibniz was an enlightenment age co-discoverer, with his contemporary Newton, of calculus. Indeed, his use of the **dy/dx** and ∫ symbols of calculus are universally used by mathematicians, Newton’s **y’** notation for differentiation being mostly used as

an adjunct shorthand form of dy/dx. Less generally known, (outside Germany), is that Leibniz, towards the end of the 17th century, was the true founder of modern computer science, not Babbage 100 years later. Leibniz was the first to both invent and propose the use of binary code in computers. He created a virtual computer as a thought experiment, since technology did not allow for any kind of real one in those days, and the computer used his invention, binary code. Why? Leibnitz was a devout Christian, and he said that 0 represented the absence of God, and 1 the presence, and that his computer should have this at its core.

I have learned throughout my life that facts, when available, are better than intuition, but have also learned to rely heavily on my intuition when facts are not available. I vividly remember, around the age of 10, lying on the grass in the garden of my foster parents' council house, feeling my connection with the earth and everything in it, feeling that I was not alone but connected with everything. My memory self saved this blissful memory with such strong, sensual, loving and intellectual referential tags that it has always been there when I needed it, many, many times even until this day. However my memory self saved it without words, "just" emotional and sensual tags, I was too immature to verbalize, then, what I was feeling. It was this intuition that helped me reject the logical nonsense and corruption of the Catholic Church at 13 years old. It was this intuition that led me to marry my wife in 1982, after meeting her in America in summer 1981 and corresponding with her until she moved to London in January 1982, we married 4 months later. And it is this intuition that leads me to scoff at the "neural correlates of consciousness" theory and embrace Buddhist psychology and Schrödinger/Everett's Many Worlds Theory.

My final reason for rejecting the "neural correlates of consciousness" theory is the increasing convergence of modern physics with Buddhist psychology. Schrödinger/Everett's conception of the Big Bang originating in a single, universal wave from which everything emerged seems astonishingly like the Buddhist conception of the universal, timeless *space of the mind*; Schrödinger's creation of the universally accepted equation for waves, which describes them as probability fields seems to me like Buddhism's description of the physical world as "emptiness"; the Many Worlds explanation of entanglement, seems to me identical to the core Buddhist theory of dependent arising; finally, the Many Worlds theory itself, in which every one of the infinitely-occurring entanglement events causes every object in our universe, including our "selves," to split into an infinite number of different outcomes seems to me a remarkable explanation of Buddhist reincarnation. Is it a coincidence that the theories of the greatest explorers of human consciousness are converging with the theories of the greatest observers of the physical universe around the idea of a universal consciousness at the heart of everything? I think not.

The cosmological discoveries that dark matter and dark energy must together comprise 95% of the universe, leaving only 5% that can be modeled in physics by the existing theories of quantum mechanics and relativity, imply the need for a new theory that encompasses the known physical world of matter and energy, dark energy, and dark matter. String theory has been proposed as a model that can encompass both relativity and quantum mechanics, but does not,

(I think,) account for dark matter and energy in its equations. Disagreements about quantum mechanics led to the Copenhagen Interpretation, an interpretation of Quantum Mechanics based on the proposition that Physics is the Science of measurement and that a measurable quantity has no reality until it is measured. Einstein, whose work on wave-particle duality and the photon was crucial to the development of quantum mechanics, strongly disagreed with the Copenhagen Interpretation. The Many Worlds Interpretation (MWI) of Quantum Mechanics, proposed by Everett after Einstein's death, replaces the Copenhagen Interpretation and overcomes Einstein's objections. The MWI posits a single, universal wave function that describes everything in the universe. String theory proposes that the fundamental constituents of the universe are not point-like particles, but rather one-dimensional, vibrating strings.

It seems possible to me that the universe(s) has consciousness as its basis: that the Big Bang was an event of evolving consciousness that created the known universe, including dark matter and energy; that an overarching Theory of Universal Consciousness, combining String Theory and MWI with an as yet unknown model, (that is, a set of equations), for consciousness, could better describe reality than what we have now. If consciousness is real, not an unreal by-product of brain activity, then physics should account for it as the obvious progenitor of the Big Bang. Of course, then consciousness would be the prerequisite for life, (as well as the physical universe,) and not the other way round! We would exist in a hidden, universal ocean of consciousness, evolving together with the physical world, and taking advantage of the physical conditions that result in life, to bubble up into new forms as animal and human consciousness, when conditions allow.

Assuming consciousness is real, and as described above, how could it be modelled mathematically? I think a good starting place would be to examine consciousness and extrapolate some of its properties, based on my personal observation and the properties of its progeny, the physical universe and life.

Inheritance. Everything in the universe inherits properties from its progenitor. Molecules, for example, inherit a property such as mass from their constituent atoms. Humans inherit DNA from their parents. When a nucleus splits during nuclear fission, the mass of the resulting nuclei is inherited from the parent nucleus, as is the energy released by the fission. I think it is reasonable to assume that human intelligence has inherited some of its properties from original universal consciousness, as well as from the physical universe and our evolutionary predecessors.

Hierarchical. Inheritance leads to hierarchies, starting with the universal wave of the Big Bang, from which all matter, energy and life have proceeded in a hierarchical manner. The Big Bang's wave gave rise to the basic particles of matter and energy, the basic particles of matter coalesced into atoms, giving rise to molecules, giving rise to cosmic "dust". Motion and gravity caused the dust to condense into stars, surrounded by dust belts, which gravity and collision in turn formed into planets. I believe that consciousness is likewise hierarchical, from fish and insects, to mammals and birds, and to humans.

Stochastic. The outward explosion of the building blocks of the universe, from the Big Bang, randomly determined the formation of the resultant energy

and matter. This formation, however, occurs in a stochastic manner, with random probability distributions or patterns that are subject to statistical analysis, and with the potential for prediction, at least on a large scale over long periods of time. Scientists have thereby been able to predict that about 13.8 billion years have elapsed since the Big Bang. Consciousness, too, should behave in a stochastic manner, and therefore allow for prediction.

Entropic. The second law of thermodynamics states that the entropy of an isolated system can only increase or remain constant, it never decreases. One consequence of the second law is that heat cannot spontaneously flow from a colder body to a hotter body. In like manner, consciousness can only arise when appropriate conditions in the physical universe are met for the emergence of life, and when life forms reach a certain level of sophistication, as in the evolution of animal life from plants. Consciousness should be entropic.

Evolutionary. As planets have “evolved” from cosmic dust and stars, and as lizard consciousness has evolved from insect consciousness, so, too, has human consciousness evolved, and is maybe evolving right now to our computer chip successors, if conditions arise for consciousness to arise from computer systems.

The Conservation of Consciousness. The first Law of Thermodynamics states that energy cannot be created or destroyed, only transferred or converted from one form to another. The application of this law to consciousness would be life and death; consciousness emerges in the embryo, grows to adulthood, then decreases with old age and death. I have heard universal consciousness compared to a river which forks and splits, and into which tributaries flow, before the whole returns to the ocean from which it sprang via evaporation and rainfall. Consciousness is universal and indestructible.

Emptiness. Buddhist psychology describes consciousness as empty, as in the emptiness of the space of the mind. This reminds me of Einstein’s Theory of General Relativity, in which star systems and planets interact with each other in “empty” space because of gravity, which Einstein describes as the warping of spacetime by physical objects. Spacetime, like consciousness, seems to have a very special kind of “emptiness.”

Luminosity. Buddhist psychology describes consciousness as luminous. Even the most basic of quantum particles exist in energy levels. Photons, particles of light, have luminosity. Perhaps the luminosity of consciousness is the energy level of its most basic component, a vibrating string perhaps.

To date, dark matter and dark energy cannot be observed directly. We only know of their existence because of huge discrepancies in scientific predictions of cosmic movement, that is, by the giant “shadows” they cast. In the absence of direct observation, scientists are having to make predictions about the nature of dark matter and energy based on changes in the “shadows” with respect to the material world. Consciousness, in contrast, is observable both indirectly, through brain scans, and directly, by meditators. I believe that it should be possible to analyze the documented knowledge of consciousness produced by meditators across the millennia, in books such as "The Great Treatise on the Stages of the Path to Enlightenment," a central text in Tibetan

Buddhism, using AI to produce a knowledge base of consciousness that is meaningful to both scientists and meditators. This could be compared, indeed merged, with the growing body of knowledge, from neuroscience and psychologists, produced by indirect scientific observation and clinical psychology. This essay has been, in part, an appeal to bridge the gap between scientists and meditators.
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Profiles of the selves. Personality types. Disorder Diagnostics. Smoking and drinking case studies revisited.

Computer programming, playing music; single point of focus, usually exclude input from selves except where needed. As such a kind of meditation, and certainly strengthens Command Layer.

"*Panpsychism is the philosophical view that consciousness, or a mind-like quality, is a fundamental and ubiquitous feature of reality, existing at the most basic levels of matter, like fundamental particles. Instead of consciousness emerging from non-conscious matter, panpsychism posits that consciousness is always present in some rudimentary form, and more complex consciousness, like that of humans, emerges from these basic elements*." Google AI.
Rewrite appropriate sections in essay.
Re consciousness and life the same, or does life spring from consciousness (panpsychism)? Does all life have some form of consciousness? What forms of consciousness are there?

Bodily self - neurons are not only in the brain, add this, check extensive google ai on this topic. Brains evolved from ganglia I believe. Revisit Blindsight.